MASTER PLAN FOR ECONOMIC DEVELOPMENT

Louisiana Economic Development Council

Louisiana: Vision 2020

2003 Update

Master Plan for Economic Development

Submitted by:

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Updating the Vision of Louisiana in 2020

Louisiana: Vision 2020 is an economic development platform built upon three solid principles of lifelong learning, economic diversification, and a high quality of life for our citizens. Since ***Vision 2020*** was created in 1998, Louisiana has made many of the plan's recommended changes, putting in place the building blocks to achieve this vision. While much has been accomplished, much remains to be done.

The *2003 Update* is the Louisiana Economic Development Council's first update of the state's long-term strategic plan. Based on input from Louisiana citizens, economic changes, and a better understanding of factors affecting economic development, the *2003 Update* contains newly added or expanded areas of emphasis, including:

- Chronic **poverty** as a crisis that impacts the state's ability to progress economically;
- Early **childhood education** & **teacher quality** are essential to increasing student achievement and breaking the cycle of poverty;
- **Technical training** that meets the needs of business is important for the success of our existing businesses and for attracting new companies to the state;
- **Research & development,** performed by federal, university, and, in particular, private sector entities, as critical to a state's and region's capacity to innovate;
- **Cluster-based economic development** is the state's economic development strategy and provides a balanced approach based on existing strengths and emerging industries;
- **Entrepreneurship** is vital to creating most new, high wage jobs within our state;
- **Coastal loss** is not only a geophysical and social issue, but an economic issue that must be addressed;
- **Social capital** is critical to attracting & retaining the entrepreneurial creative class;
- The **out-migration** of too many young people is a serious threat to Louisiana's future, and the pattern must be reversed; and
- **Louisiana's image** must be improved both inside and outside the state.

The original ***Louisiana: Vision 2020*** document contained numerous benchmarks and targets that provided an objective way for citizens to monitor the state's progress. To make these measurements more accessible and allow for annual updates as new data become available, the updated benchmarks are now available on the Web at http://vision2020.louisiana.gov/.

Vision 2020 is a roadmap to change and strengthen Louisiana's economy. To succeed, all of us -- citizens, businesses, and leaders – are responsible. We must work for this vision to become a reality.

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I. Executive Summary

Louisiana: Vision 2020 is a challenge to create a better, more competitive Louisiana and a guide to economic renewal and diversification. It is a platform for innovative initiatives. It is a process by which our progress toward our long-term goals will continue to be promoted and monitored.

Louisiana: Vision 2020 is a living strategic plan. This long-term plan has provided a unified vision and a common direction for Louisiana's economic development efforts. Louisiana's citizens, businesses, agencies, and other groups called for and continue to seek a unified, coherent process for improving the state. *Vision 2020* provides a roadmap for such improvement. *Vision 2020* is particularly important for Louisiana because of our history, our political past, and the need to position the state to prosper amid national and global markets.

The Louisiana Economic Development Council is required by law to update the state's master plan for economic development every five years to ensure that it remains aligned with the needs of the state and the desires of our citizens. To ensure that it remains a living document, the Council has chosen to house the *Vision 2020* benchmarks on the Web (http://vision2020.louisiana.gov/) instead of publishing them in print. This will allow the benchmarks to be updated annually as new data become available.

This *Louisiana: Vision 2020, 2003 Update* is the result of numerous Council and task force meetings, Cabinet and state agency input, regional public meetings, written comments, and email suggestions. Since the creation of the Economic Development Council in 1996, over 130 meetings and hearings have been held, recommending more than a hundred policies and actions designed to help us reach our goals.

The result of all this attention is a demanding, visionary document. The plan is built around a vision of Louisiana in the year 2020 as a place with a vibrant, balanced economy; a fully engaged, well-educated workforce; and a quality of life that places it among the top ten states in the nation in which to live, work, visit and do business.

Louisiana: Vision 2020 is grounded in reality and embodies a full awareness of our historical shortcomings. It requires that we alter our behavior radically to be fully competitive in a global economy. It demands that we create new quality jobs in high growth sectors. It calls for a philosophy of making investments in our future and of making those responsible for the investments accountable for their performance.

Louisiana: Vision 2020 recognizes that too many of our citizens live in poverty, and that this lowers the quality of life in Louisiana for everyone. The potential vital contributions of these citizens remains trapped, creating a financial burden for the state, rather than a positive contribution to their families' incomes and the state's economy. Louisiana must seek creative ways to move these citizens out of poverty and into the workforce as fully engaged participants in our economy.

Many of those living in poverty in Louisiana also live in rural regions of the state. One of the most complicated problems facing our citizens will be addressing economic growth in these rural areas.

In pursuit of *Louisiana: Vision 2020*, three goals are used as the plan's primary architectural elements. **Goal One**, the one that makes the other two goals possible, is to re-create our state as a *Learning Enterprise*, a rich, diverse, complex organism in which all businesses, institutions, and citizens are actively engaged in the pursuit of knowledge. Louisiana will be a place where every citizen has the opportunity and responsibility to continue learning throughout his or her lifetime.

Louisiana: Vision 2020 demands that every citizen, business, and institution take direct responsibility for the acquisition and utilization of knowledge. As employees learn new skills and gain new experiences, they are better able to take on new responsibilities, which lead to promotions and higher wages. In this way, lifelong learning becomes directly linked to upward mobility and economic development.

This *Louisiana: Vision 2020, 2003 Update* places new emphasis on the importance of early childhood education and teacher quality as keys to increasing student achievement and breaking the cycle of poverty. It calls for improved math and reading performance in high school and the elimination of functional illiteracy. It demands a workforce with the knowledge and skills to compete globally, and increases the emphasis on workforce training focused on the needs of industry. It looks forward to education and workforce training systems that operate seamlessly to support lifelong learning for all residents of Louisiana.

Building on this raised educational platform, **Goal Two** calls for an economy that is driven by a diverse and thriving set of technology-intensive industries. It positions our colleges and universities to be important sources of well-educated employees, sources of expertise for problem solving, and sources of technology for commercialization.

Goal Two envisions a balanced approach to economic development, encompassing business retention, targeted attraction, and business creation and growth. It includes a focus on the importance of creating an environment in which entrepreneurs will thrive, since entrepreneurs create most of today's high growth companies and new high wage jobs. It stresses that our economic development strategies must continue to shift to a broader focus on the retention and creation of high quality jobs — jobs that will increase incomes and wealth and keep more of our talented graduates and workers in the state.

It foresees a Louisiana with a tax structure, legal and regulatory climate, transportation infrastructure, and information infrastructure all working together to create a fertile, dynamic environment for profitable and competitive businesses.

It recognizes the importance of the state's existing industries, while at the same time actively seeking diversification into emerging technology areas where high growth is expected in the coming years. Independent research identified fifteen technology-driven clusters—eight existing industry clusters and seven emerging clusters—as targets for Louisiana's economic development efforts. As was called for in the original *Vision 2020*, Louisiana Economic Development (LED)

has undergone an organizational transformation to focus on these clusters. The clusters are also the targets of state research and development investments.

Vision 2020 is Louisiana's call to embrace the challenges and opportunities of the 21st Century. **Goal Three** raises the bar so that a mediocre quality of life is not an alternative for Louisiana. It says that by the year 2020 Louisiana will rank among the top ten states in the nation in standard of living indicators. It calls for increased personal income, for the elimination of poverty, and for quality health care for all Louisiana citizens. It demands that we provide safe homes, schools, and streets for all of our citizens and that we pay special attention to the needs of our children.

This *2003 Update* also recognizes that Louisiana must focus on our communities to rebuild the social and economic relationships that create a sense of trust and widespread communication. This social capital helps to create the foundation for developing and strengthening resources that make our communities desirable places for knowledge economy companies to do business and their employees to live.

Goal Three calls for the preservation, development and promotion of Louisiana's natural and cultural assets for their recreational and aesthetic values. It takes economic advantage of this heritage with a call for statewide expansion of the tourism industry. By implementing the reforms driven by *Vision 2020*, we will continue to make measurable progress in the most important quality of life indicators.

We must promote a positive state image, portraying Louisiana as modernizing, forward-thinking, progressive, and moving in the right direction—because we are.

The first five years of *Vision 2020*'s implementation show significant progress against our benchmarks. We are not done—but if we stick with our goals over the long run, we can reach them. While we must continue to understand and address our shortcomings, *Louisiana: Vision 2020* is a challenge to every citizen to take note the progress we have made and to draw from it the courage to step forward.

Finally, *Louisiana: Vision 2020* is a bold challenge demanding involvement and commitment. It serves as a catalyst for action, as a framework and guide for building a better and more competitive Louisiana. The Louisiana Economic Development Council will continue to use the plan's goals and objectives as the basis for policy initiatives and the benchmarks to monitor progress towards achieving the lofty goals.

The term "technology" as used throughout this plan is defined simply as "a useful thing," a definition that includes the intangible, so that a process, for example, is as much a technology as is a device. No distinction is made for "high technology."

II. Economic Overview

The U.S. and Global Economies

The U.S. economy is fighting its way out of a binge of market euphoria. Through most of the 1990s, the U.S. economy expanded at an unprecedented rate. Job creation increased, unemployment remained low, and inflation and interest rates remained in check. Some believed that fundamental changes in the economy had made the business cycle a thing of the past, and that sustained growth would continue. We now know that the business cycle is still very real, as the nation has once again experienced a recession.

After the stock market began dropping in April 2000, the national economy followed suit, slowing down by the end of 2000. Real gross domestic product (RGDP) declined in the first three quarters of 2001, picking up slightly at the end of the year and into 2002.

Various groups offer different projections of near term prospects for the economy. Projections by Global Insight (DRI-WEFA) predict steady growth of 3 to 4 percent in RGDP through 2004. These projections indicate that the economy should rebound and grow in the next few years. Still other predictions show that the S&P 500 has yet to lose the amount of value that it historically has dropped in previous recessions. The large stock market losses as well as other factors have caused the net worth of American households to shrink for the last two years. If the trend continues, and share prices go even lower, U.S. households may experience a further reduction in wealth. As a result, consumers may begin saving more and spending less, pushing the country back into recession.

The U.S. is still enjoying high productivity growth, largely as a result of significant investments in information technology. Because of new technologies and standards, supply chains and markets are much more interconnected. Although profits and business investment have suffered their steepest decline since the 1930s, according to *The Economist*, labor productivity should continue to improve business efficiencies and long-term growth.

One of the most notable changes occurring in the U.S. and world economies is the growth of what is often referred to as "the knowledge economy." What does that mean? We are accustomed to an economy based on the production of commodities – wood products, grains, processed foods, steel, and so on – where a raw material is changed into a finished product. These industries continue to be important and are all being transformed by technology. However, a larger lesson can be learned from the 20th Century.

As technological changes transform industries, companies must continue to innovate to remain competitive. In an essay titled "Brainpower and the Future of Capitalism," Lester Thurow lists the 12 largest industrial companies as of January 1, 1900. Of the 12, 10 of the companies were based on natural resources: rubber, leather, oil, gas, steel, lead, sugar, etc. Furthermore, of the 12 companies, only one is still in business today: General Electric. All of the others disappeared, the author suggests, because new technologies or processes came about to which they could not adjust.

Without knowledge – from the impact a talented workforce can have on productivity to critical investments in education, research, and development – individuals, businesses, states, regions, and nations will not be able to compete in this emerging economy.

Today's knowledge economy is closely linked to the health of rapidly growing businesses and driven by technological changes that are altering the way companies and governments do business, as well as the way we live.

Fundamental changes include:

- Higher productivity rates
- More flexible labor markets
- Better inventory management (largely as a result of information technologies); and
- A larger percentage of jobs in the service sector

These factors have not changed as a result of the 2001 recession. In fact, they are continuing to have an impact, and some hold that the recession may have been minimized as a result of these fundamental changes.

Information and communications technologies have effectively made a small world smaller. Companies embrace these technologies to identify, market to, and manufacture for new and growing markets throughout the world. The global economy is here to stay.

The Southern Region

Over the last 20 years, the Southern region has not kept pace with the rest of the nation in many areas critical for performance in today's economy. The history of economic development in the South provides some insights. After World War II, the south embarked on a strategy to take advantage of the low cost of its land and labor, enticing manufacturers to move south. This strategy was very successful, resulting in many new, relatively good jobs for citizens, and the South's transformation from an economy based on agriculture to manufacturing. These jobs led to increased wealth and incomes in the region.

Although this strategy was beneficial, most of the companies that moved manufacturing plants to the South maintained their headquarters, research units, and highest paid employees in other parts of the country. As a result, much of the wealth generated by those manufacturing facilities ultimately ended up outside the South.

In the early 1980s, a few Southern states began to recognize the need to build their economies from within, as it became increasingly clear that companies looking for low production costs could benefit tremendously from a move offshore. For a variety of financial, political, and social reasons, some states began sustained investments in key areas such as education, research, and technology development that are now showing results. It is states such as North Carolina and Georgia that have taken the lead in the South in participation in the knowledge economy. Clearly, all Southern states now understand the importance of these types of investments, but

some have had the financial ability and political will to make and maintain these investments more than others.

Louisiana's Economy

Historically, Louisiana's economy has revolved around its wealth of natural resources, focusing on oil and gas, agriculture, forestry, and fisheries. Like other Southern states, our economic development efforts focused on natural resource extraction and processing and using the low cost of land and lower wage rates to attract branch-manufacturing plants. These manufacturers brought relatively higher paying jobs for our citizens, including many in rural areas, leading to increases in incomes and wealth.

Louisiana's economy has been marked by periods of growth and decline largely tied to the price of oil and gas. Our oil and gas reserves have provided the base for the extraction, refining, and related petrochemical industries. Increases in oil and gas prices are accompanied by increases in extraction activities and related increases in construction, shipbuilding, pipeline operation, oilfield instrumentation and machinery production, and water and helicopter transportation. Growth in this arena leads to accompanying growth in trade, services, and banking as well as increased revenues for the state. When the oil prices decline over a period of time, there is a decline in all the same activities that ride the wave up. Although our economy today is not as closely tied to oil prices as it once was, there is still a strong link.

A quick look at statistics on Louisiana's economy today indicates that manufacturing employment and payroll are still dominated by oil and gas and related industries and transportation equipment. Chemical and allied products and petroleum refining account for almost 24 percent of manufacturing employment and 35.3 percent of payroll (compared to 6.1 and 8.1 percent, respectively, for the nation as a whole). When transportation equipment (primarily shipbuilding) is included, the numbers jump to 37.7 percent and 49 percent, respectively. Payroll from mining-related activities accounts for 4.7 percent of total payroll in the state – eight times the national average.

Petroleum products, petrochemical manufacturing, and oil and gas mining output together account for 19.4 percent of Louisiana's total gross state product (GSP). However, on the national level, the output of these three industries only accounts for 3.1 percent of gross national product (GNP). While these industries remain important Louisiana employers, these statistics point to an over reliance on their economic output, underscoring the need to further diversify our state's economy.

Oil and gas (exploration, production, and refining), chemicals, and related industries, are tremendously important to the state. They are technology-intensive and provide many high quality jobs. While we must work hard to retain and expand jobs in these high paying industries, their growth rates are expected to be relatively flat in the coming years. As a result, the state must look to other high growth, high wage industries to provide additional quality jobs for our citizens.

While manufacturing jobs are very important because they pay relatively higher wages and stimulate other economic activity, services are a much larger and faster growing segment of the economy. Services account for almost 30 percent of jobs in Louisiana, compared to almost 10 percent for manufacturing. Some of these service jobs are associated with the traditional manufacturing industries and some are high paying professional services jobs, but one third of the jobs are lower paying jobs associated with food and accommodation industries. Healthcare services account for almost half of all service jobs.

Relative to the rest of the country, income measures show that Louisiana's citizens are not generating as much income as those in other states. These lower incomes inevitably lead to a lower quality of life and standard of living. In 2001, Louisiana ranked 45th among the states with per capita personal income of $24,535, compared to $30,472 for the nation (U.S. Department of Commerce, Bureau of Economic Analysis). Still, Louisiana did show a relative gain in 2001, with a growth rate of 5.6 percent, compared to a substantially lower growth rate of only 2.4 percent nationally. We are moving in the right direction, but at 81 percent of the national average, there is still a long way to go.

While many of our citizens have quality jobs, the March 2002 *Current Population Survey* reports that in 2001, 16.2 percent of our citizens were living below the poverty level. Not only is this an unacceptably high percentage of citizens living in poverty, it also means that about one-sixth of our population is contributing little to Louisiana's economy. Moving people out of poverty not only elevates their quality of life, it also reduces the state and federal economic burden for healthcare, housing, food stamps, and welfare. In order to improve the lives of all citizens, we *must* increase incomes for all citizens – and that requires that we move more citizens into our mainstream economy. This is a major challenge for Louisiana in the coming years.

Louisiana's Shift into the Knowledge Economy

Changes in the national and global economies mean that the growth of high quality jobs and companies in Louisiana no longer occurs only as a result of cheap labor, the presence of natural resources, or our physical location – factors that have led to growth in the past. Because our historical economy leaves the state vulnerable to ups and downs, diversifying into rapidly growing, knowledge-based industries provides greater balance and stability in the future. A more balanced economy not only leaves Louisiana less vulnerable to downturns, it also results in an environment for creativity and innovation, where good ideas in one sector spill over into improvements for other sectors as well.

Louisiana: Vision 2020 identifies six technology areas as critical for Louisiana's future: medical/biomedical; micromanufacturing; software, Internet, and telecommunications; environmental technologies; food technologies; and advanced materials. Important research and development (R&D) related to these technologies exists in Louisiana already, providing a stable base for future development. MIT economist Lester Thurow described these six sets of technologies as, "not just creating [the next] big industries: they are going to change how we do everything" ("Brainpower and the Future of Capitalism").

As called for in the original *Vision 2020,* Louisiana has begun making recurring investments in a number of areas important for a *Vision 2020* economy, including investments in education and training, research and infrastructure in key technology areas, and workforce development. Examples include substantial increases in funding for Pre-K-12 and postsecondary education, investments in information technology and biotechnology infrastructure as well as research at Louisiana universities, and the creation of the largest customized training program for business in the country.

Our Place in the World

Key ingredients for a vibrant 21st Century economy in Louisiana include a skilled and educated workforce, access to technology, and access to capital. Information and communications technologies continue to revolutionize manufacturing, transportation, health care, even wholesale and retail trade. Growth of high value-added industries and their associated jobs depends on trained, innovative, entrepreneurial citizens embracing and utilizing those information and communications technologies.

Global competition forces companies to compete based on price, quality, and timely performance. The changing nature of the marketplace and the technologies making those changes possible has fundamentally altered the way we do business. These changes show up in the way workers relate to machines and products, the way products are conceived and produced, the way markets are served, and the way in which companies interact. As a report from the North Carolina Economic Development Board said, "…the terms of competition have changed for business, which in turn has changed the terms of competition for people, for communities, and for state economic development policies."

New realities affecting the economy include:

- *Innovation.* Innovation has been defined as "the relentless, ever-changing, creative process of bringing products and services to the market" (Southern Growth Policies Board). Today's economy requires continuous innovation. Successful companies must be constantly improving production practices and products and moving into new markets. Louisiana can spur innovation by encouraging private sector and university research and ensuring that it is easy for companies to access know-how within universities.

- *Technology.* There are no longer any low-tech industries; only low-tech companies. Companies that do not embrace technology cannot remain competitive, and they will not be successful over the long term. Technology must be integrated into every aspect of a company's business in order to compete locally, regionally, nationally, or internationally. Technology will drive the future. Louisiana's policies must make it easy for companies to access technology through various avenues such as the state's universities and cost effective broadband connectivity.

- *Entrepreneurship.* Growing companies at home is becoming ever more important. Our economic development strategy must balance the need to recruit industry from outside the state with the need to do a better job of supporting existing industry and creating new,

rapidly growing enterprises. Louisiana must focus more on providing support and an environment conducive to growing early-stage companies.

- *Location factors have changed*. Cheap labor, the presence of natural resources, and physical location that provides transportation advantages are much less important. For knowledge-based firms, which use innovation, quality, and increased productivity to create competitive advantage, low input costs matter much less. "States that provide an environment in which firms can become more productive and innovative will outperform those that can only offer low costs" (*2002 New State Economy Index*, Progressive Policy Institute).

- *Skilled workers are the most important location factor*. As a result, knowledge economy companies locate where skilled workers are located. Because these skilled workers now demand a high quality of life, states must focus attention on ensuring that they are attractive to these skilled workers.

- *The types of workers companies need are changing.* The demand for managerial, production, and low-skilled laborers is decreasing while the demand for skilled technicians, designers, and high level professional services is increasing. Louisiana will continue to sharpen its focus on providing training and re-training for today's jobs as well as those of the emerging, knowledge-based economy.

- *A changing base economy*. The number of manufacturing jobs as a percentage of total employment is decreasing, as services and information technology and telecommunications companies account for an increasing number of jobs. While manufacturing jobs are desirable because they generally bring in more money from outside the region than other jobs, Louisiana must also look to other growing sectors of the economy to increase the number of quality jobs.

"In the New Economy, tomorrow's jobs will come from fast-growing entrepreneurial firms and not from the small number of business relocations. As a result, states need to shift their focus from ' hunting and gathering' (industrial recruitment) to gardening {promoting growth from within)" (2002 New State Economy Index, Progressive Policy Institute).

Policy Implications

There are a number of things state government can do to have an effect on essential requirements for businesses to be competitive in today's world. Areas where the state can have an impact include education and training, physical infrastructure, the environment, capital, and access to technology. The *Louisiana: Vision 2020* objectives, discussed near the end of this report, represent the central policy implications of this document. Today's businesses need:

- Educated workers willing and able to learn new skills and adapt to new work practices;
- A forward looking information technology infrastructure in place;

- Sound, well-maintained physical infrastructure, including transportation, power, water, sewer;
- A progressive, competitive business climate;
- Reasonable, predictable, and stable environmental and tax laws;
- Access to services including information, technology, financial, and other business services;
- Risk capital and debt capital managed by people who understand today's world, including international finance;
- Access to technology and know-how for those small- and medium-sized companies without the critical mass to develop technologies on their own.

Louisiana's Strengths, Weaknesses, Opportunities, and Threats

Louisiana's strengths, weaknesses, opportunities, and threats relative to the international, national, and regional economic environment are numerous.

Strengths:

- A cadre of knowledgeable, dedicated and progressive people in government, academia and the private sector who are capable of reaching consensus on a vision of the state's future and leading its people toward it.
- A diverse population with entrepreneurial capabilities across a broad spectrum of competencies who are willing to work and, if necessary, sacrifice, for a better future for themselves and their children.
- An excellent centralized geographic location relative to both domestic and foreign markets.
- Cultural, historical, and recreational resources that offer opportunities to greatly expand tourism.
- An abundance of natural resources including rich farmlands, productive forests, diverse wildlife, navigable waterways, and nearby reserves of fossil fuel.
- Strong economic base industries including agriculture; aquaculture; fossil fuel exploration, mining and refining; bulk and specialty chemical manufacturing; marine engineering and construction; environmental engineering and remediation services; and medical services.
- A K-12 accountability system that has been recognized nationally as an outstanding and rigorous system.
- A recently unified system coordinating Louisiana's community and technical colleges that supports the state's technical workforce needs and fills the educational gap between high schools and the state university systems.

- Four-year university systems unified by a Board of Regents and its 5-year master plan to raise academic standards, increase efficiency, and help meet state's higher education, research, and economic development needs.
- A well-funded workforce training system customized to the needs of business
- Prioritization of spending by state government. According to a 2001 study by Louisiana Association of Business and Industry (LABI), the State of Louisiana has implemented 70 percent of the Select Committee on Revenues and Expenditures' (SECURE) recommendations, resulting in an estimated savings to the state of $2.1 billion.
- Improved fiscal performance of state government, earning a ranking of 18th from *Governing* magazine in 2002 (up from 44th in 1995).
- An industrial based that is already technology-intensive and provides a large number of high quality manufacturing jobs for the state.
- A growing technology base in areas such as biomedicine; micromanufacturing; integrated information management and control engineering; advanced materials; environmental characterization, containment and remediation; and food production and safety. These technologies are the result of and are supported by the expertise of existing industry and the state's post-secondary educational and research institutions.

Weaknesses:

- A high poverty rate, with large numbers of citizens who are not benefiting sufficiently from or contributing sufficiently to Louisiana's economy.
- An image internally and externally that portrays the state as backwards, politically corrupt, accepting of mediocrity, and a 20th Century economy hold-out.
- A problem of net out-migration caused by too many Louisianans leaving to pursue opportunities in high growth regions outside of Louisiana and a corresponding lack of in-migration of individuals drawn to jobs in Louisiana.
- The state's poor rankings in adult literacy, high school drop-outs, teen pregnancies, violent crime, and drug abuse.
- A system of public education that has not imparted to its students the skills and training necessary for many to qualify for or retain advanced, technology-based jobs in a globally competitive job market.
- A 16 year experiment with "temporary" revenues that, while greatly fixed by the recent sales tax/income tax swap, leaves a legacy of instability in the delivery of state services.
- Some taxes that act as a disincentive to the growth, recruitment, and retention of technology-intensive and/or manufacturing businesses.

- A marginal infrastructure of roads and highways, railroads, air and water ports, utilities, drainage, and information that requires substantive improvement in order to support sustained economic development throughout the state.
- Rural regions that have less developed infrastructure and workforce skills and growth-oriented companies that lead to new opportunities add innovation.
- Regulatory, licensing and permitting bureaucracies that often, albeit unintentionally, inhibit rather that support new business development or expansion.
- Inadequate sources of seed and risk-oriented venture capital being invested in indigenous entrepreneurial ventures.
- Lack of cohesive angel investor networks.
- Constitutionally mandated dedication of funds that limits the discretion of government to enact and sustain fiscal and socioeconomic reforms that will facilitate broad-based economic growth and prosperity.
- The lingering perception that Louisiana remains a "Banana Republic" with self-serving governmental leaders who lack the political will to enact and sustain fiscal and socioeconomic reforms that will facilitate broad-based economic growth and prosperity.

Opportunities:

- Momentum toward improving education and workforce training. The state has begun to increase coordination and funding, and use rewards and penalties in order to encourage schools to improve and is getting results
- Momentum toward improving the infrastructure for multiple modes of transportation. New strategies and funding priorities are improving the infrastructure for all means of transportation
- Targeted investments and policies designed to foster strategic growth in existing and emerging industries
- New state and regional cluster-based economic development efforts that are already having a positive impact
- Examples of thriving economies in other regions that serve as examples of the higher standard of living made possible by investments in the ingredients necessary to be successful in the emerging, knowledge-based economy
- The strong entrepreneurial spirit that has manifested itself largely in Louisiana's traditional industries may be redirected into new opportunities as Louisiana moves to strengthen its workforce and diversify its economy.
- Greater confidence in the integrity of public officials than in past years.

Threats:

- Changes of political philosophy may undo, end, or reverse the positive changes that are taking place
- Parochial politics may block the needed investments in our future.
- A tradition of opposition to change. A new Louisiana requires the active engagement of every citizen.
- Unwillingness to make investments that won't show near-term payoffs. The most important investments that we can make will often have paybacks that don't occur until after the next election cycle, thereby creating an ongoing political impediment to change.
- A return to the mindset that looks at state budget allocations as expenditures rather than as investments. Over the past seven years, Louisiana's executive and legislative leaders have been committed to performance budgeting and investing in Louisiana's future. True economic development requires sustained investment in areas such as education and infrastructure that don't show near-term payoff.
- The belief that the state can get something for nothing. With potentially large financial expenses looming in the future, the state must continue to make necessary investments in education and economic development from limited resources.
- The high poverty rate and high (and still rising) costs of healthcare that divert scarce government resources away from other critical investments.
- Citizens and leaders in rural areas may view *Vision 2020*'s goals as unattainable in their regions and doubt that this document relates to their concerns.
- An eroding coastline that jeopardizes the industrial infrastructure and natural resources that serves as essential economic assets for the state and the country.
- High insurance and energy costs that drive up the cost of doing business.

The State of the State: Five Years After Initiating *Louisiana: Vision 2020*

Vision 2020 has guided the state's leaders to take difficult but important steps, and we are moving on course toward our goals. Five years after putting *Vision 2020* into practice, Louisiana's leaders are assembling and strengthening the building blocks for the state's future. These investments and legislative changes will have a long-term effect.

It is upon the foundation of these commitments and successes that *Louisiana: Vision 2020* will be realized. Consider the breadth of changes that have occurred. Over the last seven years, Louisiana has:

- ✓ Created a K-12 Accountability Program, ranked as one of the nation's best by *Education Week* (5th in 2003), the Princeton Review (7th in 2002), and the Fordham Foundation (12th in 2002).

- ✓ Implemented high stakes testing for fourth and eighth grade students, additional instructional time for students, additional in-service training for teachers, a character education program, and an expansion of charter schools.

- ✓ Invested $1.5 billion in new dollars to improve education at all levels.

- ✓ Raised teacher salaries by an estimated $9,000 since 1996, an increase of more than one-third, significantly outpacing U.S. and Southern average increases.

- ✓ Fully-funded the school funding equalization program, known as the Minimum Foundation Program (MFP), for the first time in history.

- ✓ Created a statewide pre-kindergarten program, targeting at-risk four-year-olds.

- ✓ Created the TOPS scholarship program, which rewards high school students who have applied themselves academically with free tuition at a state university, community or technical college.

- ✓ Moved from the bottom in technology in the classroom to the top quartile, going from 88 students per computer to seven students per computer (Louisiana Center for Educational Technology).

- ✓ Invested nearly $80 million into providing Internet access and hardware for local school districts across the state.

- ✓ Increased funding for higher education, attaining a rank of 4th in the nation in the percentage increase in postsecondary funding (Grapevine Center for Higher Education and Educational Finance, January 2002).

- ✓ Created the Louisiana Community and Technical College System, establishing for the first time a single body to oversee the state's two-year colleges and technical training institutions.

- ✓ Created an annual $50 million customized training fund for incumbent workers, providing businesses with a tool to update the skills of their employees.

- ✓ Created the Louisiana Workforce Commission, charged with streamlining and making accountable the state's $800 million annual investments in job training programs.

- ✓ Reorganized Louisiana Economic Development (LED) to target growth in strategic existing and emerging industry clusters.

- ✓ Invested over $340 million in new programs or funds dedicated to research and infrastructure that will better position our universities for research and technology commercialization.

- ✓ Launched a Gene Therapy Consortium and the Louisiana Cancer Center (Collaborative efforts of LSU and Tulane), Governor's Information Technology Initiative, and the

Governor's Biotechnology Initiative, and The University of New Orleans Center for Energy Resource Management.

- ✓ Eliminated and constitutionally prohibited the 16-year-old "temporary" state sales taxes on utilities, prescription drugs, food for home consumption, cutting regressive taxes for 84 percent of Louisianans and providing the state with revenue stability for the first time since the 1986 oil bust.

- ✓ Completed the phase-out of the inventory tax on business.

- ✓ Became the first state in the nation to eliminate the inheritance tax (phase out by 2006).

- ✓ Reformed the state's business incentives to reward job creation in the state's targeted industry clusters and other high-growth industries.

- ✓ Passed innovation tax incentives for R&D, technology commercialization, biotechnology industry investments, software development, and film and video investments.

- ✓ Invested $2.3 billion in trust funds, providing the state with a budgetary safety net and financial resources available for the long term.

- ✓ Created a stronger, unified ethics commission to help us move beyond our unacceptable political past.

- ✓ Rescued, renewed, and bonded out the $3.5 billion TIMED transportation program intended to connect all major Louisiana cities with four lane highways by 2010, 20 years faster than previously planned.

- ✓ Implemented welfare reform, reducing welfare rolls by 65 percent and saving the state approximately $109 million annually.

- ✓ Reformed the Medicaid program and brought spending under control, keeping expenditure growth down to 4.8 percent, among the lowest rates of growth in the country.

- ✓ Insured more than 237,000 children who did not have health insurance through the Louisiana Children's Health Insurance Program (LaCHIP).

- ✓ Passed civil justice reforms such as eliminating punitive damages and other things that had given Louisiana an unfair playing field.

- ✓ Developed *Coast 2050*, a long-term action plan for saving Louisiana's coast.

- ✓ Invested over $80 million for improvements to our state parks system.

III. Vision, Mission, Philosophy

Vision

Twenty years into the 21st Century, Louisiana will have a vibrant, balanced economy; a fully engaged, well-educated workforce; and a quality of life that places it among the top ten states in which to live, work, visit, and do business.

Mission

Louisiana: Vision 2020 communicates to the citizens of Louisiana a long-term strategic economic development plan to expand and diversify our economy. It demonstrates to those outside Louisiana the state's commitment to reinventing itself. It shows the state's commitment to raising income levels for all people and combating poverty. It analyzes Louisiana's competitive position and builds upon existing strengths. It will continue to serve as road map and field guide outlining a comprehensive and visionary set of economic development policies that show the path to a vibrant Louisiana of 2020.

Philosophy

Economic development is primarily a private sector phenomenon, the offspring of an active free enterprise system. Actions taken by government should be designed to foster private development, not to supplant it.

Government should attend to infrastructure needs: education, public sector research and development, transportation, and communications. Appropriations should be viewed as investments in the economic future, not as expenditures. Government should provide a stable and fair tax, regulatory, and legal environment in which business may be done efficiently and profitably. In many cases, strong, effective public-private partnerships should be utilized to achieve economic development objectives.

Louisiana must continue with its significant and sustained efforts to changes in the way it does business. While the new Louisiana will be a better place economically, educationally, and environmentally, it should remain identifiably Louisiana, a place like no other.

IV. *Louisiana: Vision 2020*

The vision is that twenty years into the 21st Century, Louisiana will have a vibrant, balanced economy; a fully engaged, well-educated workforce; and a quality of life that places it among the top ten states in which to live, work, visit, and do business.

The challenge is that in too many ways, Louisiana continues to be plagued by an economy that lags behind in knowledge economy measures. The state is not generating the number of high quality jobs we need to raise living standards for all citizens.

We still have large pockets of chronic poverty, too many adults who are not in the workforce because they do not have the education and skills to compete, and too many young people dropping out of the educational process or underachieving in school.

While Louisiana's rich cultural heritage provides us with many reasons to live here, we do not rank among national leaders in quality of life indicators. Although we are making progress, we do not yet have the kind of business climate that will breed investment and innovation in an ever-changing global market. We do not have the research capacity, capital resources, or transportation and information infrastructures that will allow us to be truly competitive.

For *Louisiana: Vision 2020* to become a reality, every citizen, every business, every school, every agency, every branch of state and local government must see the vision, believe in the vision, and accept responsibility for achieving the vision.

Louisiana: Vision 2020 is about continuing to reinvent Louisiana. To complete this reinvention of ourselves, we must embrace a 21st Century approach to economic development. We must face the realities of the global economy, the necessity of competitiveness, and the hard truth that our natural resources are no longer enough to sustain us. We must face the harder truth that anything less than the best education possible for every man, woman, and child is unacceptable.

Goal One: The Learning Enterprise

To be a Learning Enterprise in which all Louisiana businesses, institutions, and citizens are actively engaged in the pursuit of knowledge.

Education is the primary ingredient in *Louisiana: Vision 2020*. Our first goal calls for Louisiana to become a Learning Enterprise, an entity that values knowledge and treats the pursuit and utilization of that knowledge as its most important business.

In a Learning Enterprise, every Louisiana business, institution, and citizen has a job to do. For some the job will be learning to read, or learning to operate a particular piece of equipment, or learning a new set of job skills. For a small manufacturing business it may be modernization or learning how to organize a manufacturing network to compete more effectively and improve profitability. For a governmental agency it may be applying the lessons of private sector quality programs to the delivery of services in the public sector.

In a Learning Enterprise, every task performed is viewed as an opportunity to acquire and share knowledge. This commitment to the acquisition of knowledge manifests itself in the form of lifelong learning. No one is ever finished with the learning process. Every citizen will have the opportunity and the responsibility to continue learning throughout his or her lifetime whether the specific learning is to improve job performance, create a better employment opportunity, or simply enrich the quality of a life. Since everyone will be learning, everyone will be a role model.

The Louisiana of our future requires building and maintaining the best possible system of education at every level: Pre-K-12, technical schools, community colleges, and universities. Our workforce training programs must operate seamlessly with other education initiatives, and they must include a focus on training for jobs demanded by today's technology-intensive companies. We must invest in our human capital, focusing on ongoing training of workers and managers to lead our knowledge economy companies.

A few years ago, the British journal *The Economist* said, "A country with a scientific elite but an ill-educated workforce may be an innovator, but it will find it hard to ensure that new ideas are effectively used at home." The diffusion of education throughout our state is critical to our overall success. As Louisiana sets out to eradicate poverty within its borders, education must be at the heart of all strategies.

The right to a good education is fundamental to our democratic society. No human being should be denied the right to participate fully in the free enterprise system because of the lack of education.

Goal Two: The Culture of Innovation

To build a thriving economy driven by innovative, entrepreneurial, and globally competitive companies that make productive use of technology and the state's human, educational, and natural resources.

Goal Two identifies innovation and technology as the driving forces behind the growth and diversification of our economy. The Southern Growth Policies Board defines innovation as "the application of new ideas to products and processes in pursuit of profits." Southern Growth's *2001 Report on the Future of the South, Invented Here: Transforming the Southern Economy*, states that, "In the knowledge economy, the primary tools of the innovation process are technologies – the ideas, inventions, and know-how that make products and services more valuable." It is innovation and new technologies that allow companies to increase profits, pay higher wages, and increase wealth in a region. It is innovation and technology that allows today's companies to expand, thereby increasing the number of quality jobs in a region. Louisiana must find new ways to stimulate innovation, new technology development, and the commercialization of these technologies.

Invented Here identifies federal, university, and privately-performed research and development (R&D) "as one of the best indicators of a region's capacity to innovate." In particular, industrial

R&D is directly tied to market needs and competitive advantage. It is also the closest to commercialization, and accounts for 75 percent of all R&D conducted in the nation. Louisiana's share of industry-performed R&D has decreased substantially in the last 40 years, from just over one percent of the nations R&D in 1963 to 0.06 percent in 2000. To stimulate innovation, Louisiana must find new ways to increase industry-performed R&D in the state.

Keys to the ability to successfully capture innovation and technology for productive use in the economy are intellectual capital, human capital, social capital, and financial capital. Intellectual capital leads to the ideas, technologies, and know-how used to create products and processes. Research and development in companies and at universities stimulates intellectual capital, and is highly correlated to an increase in innovation and technology development. Louisiana should seek ways to further stimulate private sector R&D and commercialize technologies developed at Louisiana universities.

Two aspects of human capital are important: 1) employees, and 2) entrepreneurs. Employees include workers who must be trained and ready and able to learn on an ongoing basis as well as executive managers, who require special training and mentoring in order to create a talent pool of managers so important to our growing companies. Entrepreneurs take risks with new companies and/or technologies by moving out in new directions. Entrepreneurs create the vast majority of today's high growth firms, and since these firms account for the majority of new jobs, entrepreneurs are the job-creating engines in today's economy.

A culture that supports entrepreneurship is a culture that recognizes the benefits of the creation and growth of new companies, companies that are globally competitive and generate jobs and wealth for the region. The National Commission on Entrepreneurship emphasizes that "a successful entrepreneurial community depends on a local business culture that embraces and nurtures entrepreneurs." (*Building Companies, Building Communities: Entrepreneurs in the New Economy*, July 2000). Because entrepreneurs contribute so much to the generation of wealth, Louisiana must step out -- do more to encourage entrepreneurship, embrace entrepreneurial successes, and accept failures as an inevitable part of the process and an opportunity to learn.

Financial capital is critical to the growth of all companies. Capital for early stage companies, as well as equity and debt capital to support growth must be available for entrepreneurs as well as existing companies. Professionally managed sources of risk capital often provide services such as helping companies identify potential growth avenues, recruiting executive talent, obtaining additional growth capital, and maintaining financial discipline. Louisiana must ensure that development and growth capital are available, so companies will be created and grown in Louisiana.

From the Research Triangle to Silicon Valley, every area of our nation that has experienced significant economic growth and diversification has done so on the strength of innovation and entrepreneurial successes. In the 20th century, the South was able to compete for the relocation of industries on the basis of lower taxes and lower labor costs. With the globalization of the economy, those gains have proven to be transient. By the end of the 20th century, we could no longer work cheaper -- to succeed we had to work smarter. In this century, working smarter is the only economic development strategy that matters.

Louisiana: Vision 2020 spurred a fundamental shift in our thinking about economic development. Southern states have traditionally used their low cost of doing business to attract branch plants, which stayed for a few years and often moved on to locations where it was cheaper to operate. Today, states have shifted from a sole reliance on recruitment to an added emphasis on retaining and facilitating further development of existing industry clusters, and energizing emerging clusters in which they have strengths. For Louisiana, this shift is ensuring that our existing clusters remain competitive and grow in today's changing economy. It is also concerned with expanding into the emerging cluster areas that can provide additional quality jobs for Louisiana citizens.

A study of the state's economy in 2000 to identify and characterize clusters found 15 existing and emerging clusters. The eight clusters of traditional industries included: oil, gas, and energy technology, petrochemicals, shipbuilding and other durable goods, tourism, transportation and logistics, health care, agriculture and food products, and wood, lumber, and paper. Emerging clusters are those for which Louisiana has a small but growing base of firms and/or a strong university research base in a high growth industry. Emerging clusters can help diversify the state's economy. The seven emerging clusters identified include: information technology, medical/biomedical, environmental technologies, food technologies, advanced materials, micro and macro systems, and entertainment.

This study and *Vision 2020* also recommended a major reorganization of the state's economic development agency to focus on retention, expansion, creation, and targeted attraction within the 15 identified clusters. In 2001, the state's economic development agency, now known as Louisiana Economic Development (LED), was reorganized to focus on the selected clusters and provide the resources needed by companies trying to succeed in today's economy. As part of this reorganization, LED hired highly qualified professionals who are paid based on performance (outside of the state's civil service system) to further develop and grow our clusters.

Goal Two demands that Louisiana create an entrepreneurial culture that fosters globally competitive companies and provides high quality jobs for our citizens. It demands that Louisiana become a state whose tax structure and legal and regulatory climate are conducive to the creation and growth of technology-driven companies. It demands that we build the transportation and information infrastructures that will not only service business growth in Louisiana but will make Louisiana a leader in entrepreneurial endeavors.

Goal Three: A Top Ten State

To achieve a standard of living among the top ten states in America.

Louisiana: Vision 2020 recognizes that the world is getting more stratified between communities, states, and nations with know-how and without. That is why *Vision 2020* does not allow a fallback position; it does not consider mediocrity as an alternative. Goal Three says that Louisiana must have as its goal moving into the top ten states in the nation as a place to live, work, visit, and do business.

We have often bemoaned our low rankings in educational and economic performance. We have suffered the ridicule of pundits and competitors. Sometimes, we have complained that the criteria used in the rankings are unfair to us, that they do not consider our strengths.

Now, we say that it doesn't matter, that we must become better anyway. Now, we say that there are no excuses.

Goal Three calls for higher personal income and better quality jobs in every region of the state. It demands safe communities, quality healthcare for all citizens, and a safe environment.

Goal Three also calls for decreased poverty levels in every region of the state and a special focus on our children, as they are the hope for the future. The issue of poverty and children in poverty is especially urgent, as Louisiana will never be a top ten state unless it can break the cycle of poverty – an effort that will require energy, dollars, and creative ways to have an impact at the community level. Similarly, if *Vision 2020* is about Louisiana's future, then it is also about our children. *Vision 2020* can be successful only as far as it succeeds for our children.

Goal Three links the health of our citizens and the quality of our health care—as *Vision 2020* has done with education—to the attractiveness of our state for new businesses. Access to good primary and preventive health care for our citizens is a key component of workplace productivity and is also paramount in keeping health care costs down. The rising cost of health care is a major hurdle for businesses and state government, as this expense threatens to drain resources for other important investments.

It is social capital, the strong civic and economic relationships in a community, that strengthens communication and trust, which leads to the sharing of information and creation of ideas. People who know each other as a result of belonging to the same organizations are more likely to trust each other, share ideas, and ensure that the community provides for the necessities and well-being of others.

These relationships provide a foundation to support the entrepreneurial culture that stimulates innovation and new company creation and forgives failures. We know that successful entrepreneurial economies are characterized by strong social capital.

Carnegie Mellon professor Richard Florida has written of the importance of the "creative class," that extended family of scientists, engineers, artists, and writers who flock to certain kinds of engaged, diversified communities. A community with a strong creative class is a community with a future. Louisiana must focus on our communities and work to build social capital, in order to ensure healthier neighborhoods and a better environment for company growth.

Finally, Goal Three reminds us of our uniqueness and our strengths. Louisiana is unrivaled in the wealth of its cultural heritage. Our scenic, recreational, and cultural assets are the basis of a formidable tourism industry.

Tourism is important to us not only because of the number of Louisianans employed within the industry. When tourists visit Louisiana they bring dollars with them and leave substantial sums

of those dollars behind. This means that every out-of-state tourist visiting Louisiana is making a direct contribution to wealth creation within the state. Tourism and conventions also bring in many company executives, providing links for business opportunities statewide. Employing innovative approaches such as rural tourism, we must continue to expand and improve our tourism initiatives.

The sequencing of goals in this document in no way implies that Goal Three is subordinate to Goals One and Two. What we all want, after all, is a good place to live and work. *Louisiana: Vision 2020* provides us with the blueprint for achieving that lofty goal.

Louisiana: Vision 2020: A Platform for Innovative Behavior and Accountability

With the participation and approval of the Legislature, Louisiana is poised to take the next critical set of steps toward *Louisiana: Vision 2020*. The Louisiana Economic Development Council will continue to monitor benchmarks by which our progress will be measured. The Executive and Legislative branches are employing the power of performance based budgeting to empower new initiatives and hold agencies and programs accountable. *Louisiana: Vision 2020* calls for state leaders to make investments in future growth rather than expenditures for past failures.

This *Louisiana: Vision 2020, 2003 Update* includes an updated set of benchmarks through which the Economic Development Council will monitor progress toward the goals and objectives. Each benchmark has targets in five-year increments that can help policy makers plan for short-term steps to our goals. They also provide the public with a means of grading the state's performance. Benchmarks for this *2003 Update* will reside on the Web (http://Vision2020/Louisiana.gov/), so they are easily accessible by citizens and can be updated annually to show progress toward the targets.

Louisiana: Vision 2020 has been and will continue to be implemented through annual action plans, which are the primary vehicles for articulating the innovative, aggressive, and targeted programs and incentives that are mandated by *Louisiana: Vision 2020*. Each plan includes a report of the Council's work and an update of the *Vision 2020* benchmarks – to provide ongoing accountability. Most importantly, each action plan includes a comprehensive set of recommendations, including strategies and action plans for implementation in the next fiscal year that are benchmarked using measurable goals and objectives. Each year the action plan is submitted to the governor, legislators, and other statewide elected officials.

The cooperation of cabinet-level departmental leaders has been critical to the implementation of *Louisiana: Vision 2020*. Much of the responsibility for taking action steps to move Louisiana towards the goals envisioned in this plan falls on the departments of state government, individually and collectively. All departments are incorporating *Louisiana: Vision 2020* into agency operational plans.

To facilitate this process, the Cabinet Advisory Group (CAG), composed of key state elected and appointed officials, meets quarterly with the Louisiana Economic Development Council to

provide advice, coordination, research, and other support for *Louisiana: Vision 2020* and the action plans produced every year.

The CAG also assists the Council in assuring that *Louisiana: Vision 2020* and the annual action plans are in harmony with the Executive Budget. Benchmarks developed by the Council should be aligned with performance measures used in the Executive Budget and the Appropriations Bill.

State agencies, educational institutions, businesses, and citizens must continue to use *Louisiana: Vision 2020* as a platform for innovative behavior. New ideas and new strategies are needed on an ongoing basis; opportunity abounds.

Louisiana has begun the process of reinventing itself, and we must stay the course, as there has never been a greater need to do so. We certainly know that we can do a better job of marketing the strengths we have currently. We also know that we are better than the image we project outside Louisiana. *Louisiana: Vision 2020* goes one giant step beyond reinventing Louisiana's image: it calls for reinventing our reality. As Alfred Lord Tennyson said, "Come my friends, it is not too late to seek a newer world."

Louisiana: Vision 2020 is our opportunity to create a better, more competitive Louisiana.

V. Goals, Objectives, and Benchmarks

Goal One: To be a Learning Enterprise in which all Louisiana businesses, institutions, and citizens are actively engaged in the pursuit of knowledge

Objectives:

1.1 To have every child ready to learn by the start of kindergarten

1.2 To improve the reading and math skills of every student by high school graduation

1.3 To have a highly qualified teacher in every classroom

1.4 To have student completion rates approaching 100 percent for Pre-K-12 and postsecondary education

1.5 To raise minority achievement levels to close the achievement gap between minorities and whites at all levels of education

1.6 To increase student achievement and the number of students completing courses in the following fields: science, engineering, information technology, and entrepreneurship

1.7 To fully integrate information technology resources in schools

1.8 To have a competitive, well-integrated system of post-secondary education whose institutions have economic development as a component of their core missions

1.9 To make workforce education and technical training programs widely available at the secondary and postsecondary levels

1.10 To build a workforce with the education and skills necessary to meet the needs of business in a knowledge-based economy through flexible systems and responsive programs

1.11 To increase workforce participation rates among traditionally underutilized sources of workers (women, minorities, disabled, ex-offenders, immigrants, elderly, etc.)

Goal One: To be a Learning Enterprise in which all Louisiana businesses, institutions, and citizens are actively engaged in the pursuit of knowledge

Objective 1.1 – To have every child ready to learn by the start of kindergarten

Last year the Council for a Better Louisiana (CABL) named universal access to high quality early childhood education as the most important policy initiative Louisiana could engage in as a state to improve our economic viability. Volumes of recently published research lend overwhelming support to CABL's conclusions. It is now clear that early childhood education helps to produce improvements in school attendance and test scores as well as higher college completion rates, higher income levels, and fewer teen pregnancies. By the same token, it is also critical to reducing poverty, crime, and unemployment.

Benchmarks to track progress toward Objective 1.2 include:

- Percentage of at-risk 4 year olds enrolled in high quality, developmentally appropriate early education classes
- Percentage of childcare centers that are nationally accredited

Objective 1.2 - To improve the reading and math skills of every student by high school graduation

For most of the last century Louisiana has lagged other southern states and the nation as a whole in various measures of student achievement. In order to make Louisiana's workforce fully competitive, to increase participation in postsecondary education, and to foster a statewide climate of intellectual engagement, every high school student must be able to read and compute at higher levels.

Benchmarks to track progress toward Objective 1.2 include:

- Percentage of Louisiana schools that meet or exceed their biannual School Performance Growth Targets as part of the state's K-12 Accountability Program
- Percentage of 3rd graders who read at or above 3rd grade level at the end of the year based on the statewide reading assessment
- Percentage of 4th graders proficient in reading or math.
- Percentage of 8th graders proficient in reading and math
- Percentage of high school students scoring at or above the "Basic" level on the Graduate Exit Exam (LEAP 21) in math, English/language arts, science, and social studies)
- Percentage of students who have completed at least on year of algebra by the end of the 10th grade
- Louisiana's average ACT score as a percent of the national ACT average
- Percentage of first time college freshmen taking noncredit (remedial) courses

Objective 1.3 – To have a highly qualified teacher in every classroom

Louisiana's nationally recognized Accountability Program allows policy-makers and educators to identify and focus resources on strengths and weaknesses in our public education system by measuring what students know and are able to do. Studies have repeatedly shown that in order to effectively use these measures to drive improvement, students must have access to highly-qualified, certified teachers. Teacher quality is the single most important link to student achievement. This need is mandated under the new federal "No Child Left Behind" legislation and is critically important given a nationwide teacher shortage that will impact Louisiana and other states around the country.

Benchmarks to track progress toward Objective 1.3 include:

- Percentage of highly qualified teachers in the classroom (highly qualified based on BESE standards and certified teachers in the classroom)
- Percentage of teachers with major or minor in assigned field, grades 9-12 (math and science)
- The average Louisiana teacher salary (K-12 and higher education)

Objective 1.4: To have student retention rates approaching 100 percent for Pre-K-12 and postsecondary education

Research shows that the social and economic ills plaguing high school dropouts are significantly greater than those of students who attain a diploma. Likewise, those who complete postsecondary programs are more likely to achieve higher incomes and better employment outcomes. It is critical to the development of a more robust workforce for Louisiana to focus on improving retention rates at both the secondary and postsecondary levels.

Benchmarks to track progress toward Objective 1.4 include:

- Percentage of students in grades 9-12 who drop out each year
- Percentage of 9^{th} graders remaining in school through high school graduation
- First-time, full-time students completing a bachelor's degree within six years

Objective 1.5 - To raise minority achievement levels to close the gap between minorities and whites at all levels of education

Like the rest of the nation, Louisiana experiences disconcerting achievement gaps between students of different races and socio-economic backgrounds. Particularly given Louisiana's large at-risk and minority populations, the state must aggressively focus on effective practices for serving these populations in order to close achievement gaps. This is made more urgent by the "No Child Left Behind" Act which mandates states close those gaps.

Benchmarks to track progress toward Objective 1.5 include:

- LEAP scores by race

Objective 1.6 - To increase student achievement and the number of students completing courses in the following fields: science, engineering, information technology, and entrepreneurship.

As technology is growing in importance in nearly every industry and career, it is becoming increasingly important for states to have a workforce that excels in the fields of science, engineering, and information technology. Between 2000 and 2010, jobs in science and engineering occupations are expected to increase at three times the rate for all occupations, according to the National Science Foundation (NSF). Furthermore, technology-intensive jobs pay on average 95 percent more than other jobs (*The Mercedes and the Magnolia, Preparing the Southern Workforce for the Next Economy*, Southern Growth Policies Board, 2002). For state investment purposes, there is also a close link between the number of Ph.D. scientists and engineers that graduate in a state and those that remain and become employed in a state's workforce. Lastly, the most cost-effective job growth often comes from within a state's borders, by passionate, civic-minded entrepreneurs. Louisiana must nurture and encourage entrepreneurial activity by supporting programs that teach the basic skills of starting, operating, and growing a business. Many states are targeting scholarships and funding dollars to increase enrollment and achievement in these fields.

Benchmarks to track progress toward Objective 1.6 include:

- Science and engineering bachelor degrees awarded per million people as a percentage of the national average
- Percentage of civilian workforce with a recent bachelor's degree in science or engineering
- Number of students completing courses in science, engineering, information technology, and entrepreneurship

1.7 To fully integrate information technology resources in schools

In order to effectively prepare a 21st century workforce, students at all levels of education must have significant exposure to technology. Louisiana should seek to integrate the use of technology and information technology processes at all education levels. Training programs must provide teachers with the adequate skills to effectively use technology in the classroom.

Benchmarks to track progress toward Objective 1.7 include:

- Ratio of students per computer in K - 12

- Percentage of Louisiana schools and classrooms connected by the equivalent of a T-1 connection or better (schools and classrooms)
- Percentage connected to the Internet 2 network (7 public research universities and all other public colleges & universities)

Objective 1.8 - To have a competitive, well-integrated system of post-secondary education whose institutions have economic development as a component of their core missions

The various postsecondary institutions in Louisiana require clear articulation among technical colleges, community colleges, and universities. Effective articulation makes programs from one institution compatible with courses at others, where there is a similar curriculum. Postsecondary entities should carefully coordinate so that students who choose one level of training and later decide to pursue a higher level in the same line of study can get credit for courses taken.

Universities produce the highly educated graduates needed by many of today's fast growing companies and conduct research and development that may be of use in the private sector. Companies should be able to easily access research, the expertise of the faculty and staff, and specialized, unique equipment. Universities should also work closely with Louisiana companies to aid in recruitment and job placement to help stop the out-migration of highly educated graduates. Universities must embrace economic development as an integral part of their missions and seek innovative ways to tie their expertise into regional business development.

Benchmarks to track progress toward Objective 1.8 include:

- Percentage of colleges and universities referencing economic development in their mission statements
- Number of students in community colleges transferring to 4-year college/university
- Number of students in high school participating in dual enrollment at a community or technical college
- Percentage of 18-24 year olds enrolling in colleges

Objective 1.9 - To make workforce education and technical training programs widely available at the secondary and post secondary levels

States must raise the importance and awareness of two-year Associate degrees and technical training certifications. It is projected that by 2020, 65 percent of jobs in the United States will require an associate's degree or advanced training. In 1999 only five percent of high school graduates chose to enter a 2-year college, proprietary school, or apprenticeship. To develop an efficient and effective workforce in Louisiana, students and parents must be educated about workforce needs and opportunities, and workforce preparation and technical training programs must be available for students at all levels.

Benchmarks to track progress toward Objective 1.9 include:

- Percentage of residents who have received an Associate degree
- Residents earning industry based certificates

Objective 1.10 - To build a workforce with the education and skills necessary to meet the needs of business in a knowledge-based economy through flexible systems and responsive programs

In a report on the Southern workforce, the Southern Growth Policies Board said that state workforce development systems should be seamless and market-driven. As the economy changes in Louisiana, our workforce courses and programs must prepare graduates to fit market demands and shortages, and also prepare them with the technological skills that are important in the knowledge economy. The private sector should have more input into the system in order for the education courses to better match the needs of industry. Further, programs for workforce training must be flexible enough to respond at the speed of business.

Benchmarks to track progress toward Objective 1.10 include:

- Percentage of residents, over age 18 with a high school degree or GED equivalent
- Percentage of residents who have graduated from a four-year college or university
- Residents completing training annually through the Incumbent Worker Training Program, Workforce Investment Act programs, and other programs.

Objective 1.11 – To increase workforce participation rates among traditionally underutilized sources of workers (women, minorities, disabled, ex-offenders, immigrants, elderly, etc)

Like the rest of the United States, the South could soon face a workforce crash. Birth rates are falling below replacement levels and, as the Baby Boom generation begins retiring, the South in general, and Louisiana in particular, could be faced with critical labor shortages. The Bureau of Labor Statistics predicts that total labor force growth will drop to 0.7 percent annually between 2000 and 2025, from a rate of 1.1 percent throughout the 1990s. While increasing the education and quality of the overall workforce, we must also fill the gap by engaging traditionally underutilized sources of workers, such as women, minorities, disabled, ex-offenders, immigrants, and the elderly.

Benchmarks to track progress toward Objective 1.11 include:

- Percentage of the civilian labor force that is employed (white, black, Hispanic)
- Employment rate for individuals living with disabilities

Goal Two: To build a thriving economy driven by innovative, entrepreneurial, and globally competitive companies that make productive use of technology and the state's human, educational, and natural resources.

Objectives:

2.1 To retain, modernize, and grow Louisiana's existing industries and grow emerging technology-based businesses through cluster-based development practices

2.2 To significantly increase public and private research and development activity

2.3 To increase the availability of capital for all stages of business development and provide management assistance to emerging businesses

2.4 To provide effective mechanisms for industry access to university-based technologies and expertise

2.5 To aggressively encourage and support entrepreneurial activity

2.6 To develop and promote Louisiana's transportation infrastructure

2.7 To assess, build, and capitalize on Louisiana's information and telecommunications infrastructure.

2.8 To have an equitable tax structure, regulatory climate, and civil justice system conducive to business retention and the creation and growth of innovative companies.

Goal Two: To build a thriving economy driven by innovative, entrepreneurial, and globally competitive companies that make productive use of technology and the state's human, educational, and natural resources.

Objective 2.1 – To retain, modernize, and grow Louisiana's existing industries and grow emerging technology-based businesses through cluster-based development practices

Economic developers throughout the country now recognize that businesses benefit from locating in clusters, where they can share a skilled workforce, suppliers, and customized support services (i.e., accountants and lawyers who know the industry). Clusters are most often defined as "a geographically bounded concentration of similar, related or complementary businesses, with active channels for business transactions, communications and dialogue, that share specialized infrastructure, labor markets and services, and that are faced with common opportunities and threats." (*A Governor's Guide to Cluster-Based Economic Development,* National Governor's Association). As a result, it benefits regions to focus on existing clusters – to take care of the needs of the companies within them-- so the companies and clusters will grow.

For states like Louisiana whose existing clusters are primarily in industries that are not expected to generate large numbers of new, quality jobs in the coming years, growth will be achieved by focusing on selecting emerging clusters, those for which the state has some private sector base as well as research assets to support growth. Louisiana must continue to target its investments in both the existing and emerging business clusters in order to see growth that can set the state apart regionally, nationally, and globally.

Benchmarks to track progress toward Objective 2.1 include:

- Louisiana's targeted clusters (number of firms, employment, average weekly wages)
- Manufacturing employment
- Technology-intensive employment and establishments as a percentage of the total
- Number of regions with cluster-based economic development strategies
- Firms that export, per 1,000 firms
- Foreign direct investment per capita
- Business vitality rank (among the 50 states)
- Gross farm, forestry and fishery income
- Value added for agricultural commodities
- Annual number of acres of timberland/wetlands reforested (hardwood and pine)
- Annual production dollars spent in film and video industry
- Tourism (employment generated and visitor spending)
- Number of visitors (out-of-state and international)

- Total capital investment in oil and gas infrastructure by type of infrastructure (oil and gas production facilities, refineries, gas processing facilities, natural gas pipelines, and natural gas storage)

Objective 2.2 – To significantly increase public and private research and development activity

Research and development serves as the basis for new products and processes. While Louisiana compares relatively well in university-performed R&D, the state's share of the nation's federal and industry R&D is extremely low. Industry-performed R&D represents 75% of the nation's total R&D commitment. Moreover, industry research is much closer to the marketplace, so it is the most likely to have a near-term commercial impact. To further stimulate private R&D, in the 2002 Special Session, Louisiana passed an R&D tax credit. While this marketable tax credit should help, Louisiana must continue to invest in university research, encourage professors to seek research grants, and continually search for new federal R&D opportunities. Louisiana must also seek new, creative ways of leveraging its university research successes into larger industrial research commitments.

Benchmarks to track progress toward Objective 2.2 include:

- R&D per $1,000 gross state product (industry-performed, federally-performed, and university-performed)
- Research & development expenditures per capita (percent of national average)
- Percentage of recent science and engineering Ph.D.s in the workforce
- Number of patents issued per 10,000 business establishments

Objective 2.3 - To increase the availability of capital for all stages of business development and provide management assistance to emerging businesses

Entrepreneurs often cite the availability of capital as the single most important component of starting a business. Venture capitalists tend to respond that a great business plan and a strong team are more critical, and increase the likelihood that a company will receive funding. Both are accurate. The availability of seed and venture capital and debt financing is a key factor for growing local companies from an idea to a successful, high-growth organization. It also can be helpful in attracting technology-based companies to the state. By the same token, young companies need management assistance from the investors who back them. Scientists and engineers who have developed a new technology know their technology well, but may not be prepared for the marketing and business management that is required for a company to succeed.

Louisiana must search for strategies that make all levels of capital (seed, early stage, mezzanine, etc) available, that attract risk capital investors from out of state, and that create networks of investors who openly assist and support entrepreneurs.

Benchmarks to track progress toward Objective 2.3 include:

- Venture capital disbursements
- Total SBIC dollars awarded to Louisiana companies (5-year average)
- State dollars invested annually, either directly or indirectly, to spur capital investments in Louisiana

Objective 2.4 - To provide effective mechanisms for industry access to university-based technologies and expertise

The importance of colleges and universities for economic development has increased dramatically with the rise of the knowledge economy and the passage of federal legislation allowing government-funded research to be commercialized. Research conducted at universities has more important implications for economic development than ever before as more university-created technologies become new products and processes. Consider the impact of Duke, the University of North Carolina, and North Carolina State University on the Research Triangle and the University of Texas in Austin. Moving knowledge and technologies from Louisiana's public colleges and universities to the private sector should be the primary goal of all university technology transfer activities. Colleges and universities must make it easy for companies to access the intellectual capital (people), intellectual property (processes and products), and specialized labs and equipment in their institutions.

Benchmarks to track progress toward Objective 2.4 include:

- Number of licenses completed (total and percentage to Louisiana companies)
- Number of university cooperative endeavor agreements with companies

Objective 2.5 – To aggressively encourage and support entrepreneurial activity

Entrepreneurial companies – high growth businesses that quickly bring innovations to market – dominate job growth in the United States. States seeking to increase the number of quality jobs must include a focus on the needs of entrepreneurs and their companies, in order to nurture these fast-growing companies that are shaping the future of our economy. A rapidly growing company headquartered in a rural area can be the primary catalyst for economic development. Louisiana must infuse pro-entrepreneurship policies into state laws in ways that help to create a climate that encourages and rewards entrepreneurial behavior.

Benchmarks to track progress toward Objective 2.5 include:

- Business incubators per 10,000 business establishments (number and rank among the states)
- New business starts

- Business churning rate
- Number of women- and minority-owned businesses
- Percentage of total employment in "gazelle" firms
- Annual Small Business Innovation Research (SBIR) awards (total awards per 10,000 business establishments and total dollars awarded)

Objective 2.6 - To develop and promote Louisiana's transportation infrastructure

With two critical east-west Interstate highways, three of the top ten ports in United States, good rail and air infrastructure, Louisiana is an important transportation center. The state is geographically positioned to be a leader in the transportation industry. The state's physical infrastructure must be continually developed and expanded, and properly maintained.

Benchmarks to track progress toward Objective 2.6 include:

- Elements of the Louisiana Statewide Transportation Plan fully implemented or funded
- Elements of the Transportation Infrastructure Model for Economic Development (TIMED) fully implemented
- Percentage of state highway miles with pavements in poor condition
- Number of parishes with a public transportation system
- Number of Louisiana ports in top 10 US ports (based on total foreign and domestic cargo tonnage)
- Direct air service between Louisiana airports and external locations (foreign cities, domestic hub cities, domestic non-hub cities)

Objective 2.7 - To assess, build, and capitalize on Louisiana's information and telecommunications infrastructure

Access to high-speed Internet services is required for companies to participate in today's global economy, making it critical for economic development. High-speed services are available in the state's metropolitan areas, where companies have invested in that infrastructure. However, in Louisiana as in many other states, telecom companies cannot justify the investments required to move high-speed services into many rural areas. In those areas where market forces do not result in broadband access, government may need to step in with creative ways to encourage development and private sector investment. Such a plan should include an assessment of the viability of utilizing the state's substantial fiber optic assets for this effort.

Benchmarks to track progress toward Objective 2.7 include:

- Percentage of households with computers
- Percentage of households with Internet access

- Percentage of households with broadband Internet available

Objective 2.8 - To have an equitable tax structure, regulatory climate, and civil justice system conducive to business retention and the creation and growth of innovative companies

Having laws and regulations that are conducive to business growth can be one of the biggest challenges for states. Louisiana's leaders must find revenue-neutral options for removing economic obstacles for business expansion and growth. Furthermore, policies related to insurance, energy, civil justice, and other regulations should balance the needs of the citizens and the needs of business.

Benchmarks to track progress toward Objective 2.8 include:

- State bond rating (Louisiana, state median, national ranking)
- Federal funding flows to Louisiana
- State Business Climate Ranking
- Energy prices as a percentage of the West South Central average (electricity and natural gas for residential, commercial, and industrial customers)
- Capital investment in electric power infrastructure (power generation facilities, industrial cogeneration facilities, electric transmission lines, substations

Goal Three: To achieve a standard of living among the top ten states in America

Objectives:

3.1 To increase personal income and assets of all citizens

3.2 To provide opportunities and support to overcome Louisiana's poverty crisis

3.3 To ensure quality healthcare for every Louisiana citizen

3.4 To improve the quality of life of Louisiana's children

3.5 To ensure safe, vibrant and supportive communities for all citizens

3.6 To protect, rehabilitate, and conserve our coastal ecosystem

3.7 To preserve and develop Louisiana's natural and cultural assets

3.8 To protect Louisiana's environment and support sustainable development

Goal Three: To achieve a standard of living among the top ten states in America

Objective 3.1 - To increase personal income and assets of all citizens

A frequent misconception of economic dev7elopment policies is that the only and ultimate goal is to create more jobs in the state. Adding more jobs is vitally important, especially in a state such as Louisiana that suffers from severe out-migration. However, the ultimate goal of economic development policies must be to boost income levels, personal assets, and the *quality* of jobs for all citizens of Louisiana. If more citizens have higher quality jobs, personal income (and per capita personal income) increases, enabling more people to enjoy a better quality of life, purchase their own homes, save money for retirement, and provide for their children's futures. Moreover, policies must also provide avenues for wealth-creation and asset-building for all citizens, particularly those with lower incomes.

Benchmarks to track progress toward Objective 3.1 include:

- Per capita income as a percentage of U.S. by region (for Louisiana and 8 districts)
- Economic Performance Rank (among the 50 states)
- Average Annual Pay Rank (among the 50 states)
- Employment per year (for Louisiana and 8 districts)
- Homeownership rate

Objective 3.2 - To provide opportunities and support to overcome Louisiana's poverty crisis

Louisiana is ranked 46th for the percentage of the population living in poverty in 2001. If we are to make substantial progress as a state, we must be proactive about helping those living in the poorest conditions to receive training, jobs with a future, quality healthcare, and safe homes and communities in which to live. Nothing less is acceptable.

Benchmarks to track progress toward Objective 3.2 include:

- Poverty rate (for Louisiana and 8 districts)
- Unemployment rate (for Louisiana and 8 districts)

Objective 3.3 – To ensure quality healthcare for every Louisiana citizen

Quality healthcare is important for a healthy economy and high quality of life. Louisiana must ensure that all citizens have access to quality healthcare. Benchmarks under this objective are focused on ensuring that citizens who are traditionally underserved have the access they need to allow them to be productive participants in the state's economy and have a good quality of life.

Benchmarks to track progress toward Objective 3.3 include:

- Percentage of persons without health insurance
- Number of citizens per primary care practitioners practicing in rural areas
- Number of parishes with a shortage of healthcare professionals
- Number of citizens in poverty per community health care center

Objective 3.4 - To improve the quality of life of Louisiana's children

The way children live, think, behave, and grow impacts the cycle of poverty in which Louisiana is now entrenched. With more than a quarter of our children now living in poverty, Louisiana must make a special effort to ensure that our children receive comprehensive attention. This attention includes the basics – food, housing, healthcare, and education – with particular focus on education. State policies and programs should also infuse a good work ethic into child development by teaching children that there are substantive opportunities available for those who strive to move ahead.

Benchmarks to track progress toward Objective 3.4 include:

- Percentage of children without health insurance
- Infant mortality rate (per 1,000 live births)
- Percentage of children in poverty and extreme poverty
- Number of school-based health clinics

Objective 3.5 – To ensure safe, vibrant, and supportive communities for all citizens

Employees, particularly workers employed in knowledge industries, can choose to live anywhere. The safety of communities and the access to cultural amenities are some of the most important aspects for attracting new people to regions and for keeping those already here from departing. Louisiana must address issues such as crime, order, and cleanliness. By raising the level of civic engagement, neighborhoods can become safer, more harmonious, and less tolerant of violence.

Benchmarks to track progress toward Objective 3.5 include:

- Index crime rates – rate and national rank (overall, violent, property)
- Percentage of population with access to drinking water meeting water quality standards

- Percentage of uninsured motor vehicles

Objective 3.6 – To protect, rehabilitate, and conserve our coastal ecosystem

The state's strategic plan for the survival of Louisiana's coast has as its mission, "to sustain a coastal ecosystem that supports and protects the environment, economy, and culture of southern Louisiana, and that contributes greatly to the economy and well being of the nation." Louisiana's coast is not only important as a natural resource, but also as a vital component of the state and nation's economic infrastructure. The state and nation must create a sustainable, viable coastal Louisiana.

Benchmarks to track progress toward Objective 3.6 include:

- Cumulative acres of coastal wetlands loss that will be prevented by projects (constructed and authorized)

Objective 3.7 - To preserve and develop Louisiana's natural and cultural assets

Louisiana is blessed with vast natural resources and a unique culture that make it a special place to live. While creating a Louisiana for the 21st century, we must also preserve and develop the Louisiana's heritage and natural assets. Those tangibles and intangibles are important for quality of life as well as for their economic value to the state. Louisiana must further protect our natural treasures and market our assets to those who haven't experienced their uniqueness and beauty.

Benchmarks to track progress toward Objective 3.7 include:

- Preservation & enhancement of the Atchafalaya Basin (acreage protected, restored, improved, or opened for public access and the number of recreational & tourism facilities constructed and opened)

- Amount of State-owned lands for natural resource management by the Department of Wildlife & Fisheries and the Department of Parks & Recreation

- Total Louisiana species listed as threatened or endangered/rare plants

Objective 3.8: To protect Louisiana's environment and support sustainable development

Louisiana's past includes too little attention to preserving the quality of our environment. However, our state's industries also have a capacity for environmental remediation and protection that often goes unacknowledged. For example, the petrochemical industry has helped Louisiana achieve a greater reduction of emissions in the past decade than any other state, while simultaneously increasing its Gross Sector Product. Louisiana must work with its industries to help them develop more environment-friendly practices by positioning itself to become a global powerhouse in the field of environmental technology. Our strong base of industry, the

Mississippi River that drains two-thirds of North America, our vast wetlands, and the longest coastline in the United States provide the ideal living laboratory for our scientists and practitioners to develop the future of environmental technology.

Benchmarks to track progress toward Objective 3.8 include:

- Number of State air monitoring stations and parishes not meeting National Ambient Air Quality Standards (non-attainment stations, non-attainment parishes, and total state exceedance days)

- Pounds of toxic chemicals released into air and water (TRI gross pounds and core criteria TRI gross pounds)

- Percentage of Louisiana assessed water bodies fully allowing their designated uses

- Number of health advisories posted

Appendix A
Louisiana's Clusters

An Introduction to Cluster-Based Economic Development

Supporting the vision of Louisiana for 2020, Louisiana Economic Development has restructured its economic development efforts by implementing a cluster-based economic development strategy. What does this mean?

The most widely accepted definition of a cluster is "a geographically bounded concentration of similar, related, or complementary businesses with active channels for business transactions, communications, and dialog that share a specialized infrastructure, labor markets, and services, and that face common opportunities and threats."

The key word in the definition above is one that delineates clusters from sectors, targets, or any number of other business terms: **active**. This word, active, is the primary defining factor in determining whether a region has a cluster or a sector. Sectors are also comprised of geographical concentrations of firms. The difference is in the social capital—the active channels among firms for sharing of business opportunities and innovations—that does or does not exist.

An industry-based economic development model, clusters are networks of compatible or competitive inter-related companies working together to strengthen the industry market. Clusters have trust and linkages among firms; facilitate specialization; and build critical mass. They create a commercial magnet that attracts customers, investment, skilled workers, and specialized infrastructure.

These businesses are invested in the success of a particular industry and will impact its growth and economic development through cooperative competition, or "co-opetition." In cluster-based economic development, co-opetition occurs when competing companies work cooperatively for the greater good of their common industry.

A typical cluster includes a core industry or sector plus the related businesses, vendors, services, and resources that participate in the success of the industry. For example, Louisiana today has 150 businesses involved in designing, building and repairing boats and ships, with a labor force of over 20,000 people (*Louisiana Manufacturers Directory*). While these manufacturers form the core, many other firms support the industry. Metals suppliers/fabricators, transportation companies, the legal profession, educational institutions and others make up the "cluster" of organizations that support the primary operation of manufacturing a vessel. Cluster-based economic development is most successful when both current and future needs of the industry can be supported through building value added alliances within these organizations.

The key strategy of clustering as an economic development strategy is that it is industry driven. Louisiana Economic Development's Cluster Development Directors will facilitate linkages among industries in the state's targeted clusters, but the industries themselves must organize and support their clusters.

A study of the state's economy conducted in 2000 identified and characterized 15 existing and emerging clusters. The eight clusters of traditional industries included: oil, gas and energy technologies; petrochemicals; shipbuilding and other durable goods; tourism; transportation; health care; agriculture and food products; and wood, lumber, and paper.

Emerging clusters are those for which Louisiana has a small but growing base of firms and/or a strong university research base in a high growth industry. Emerging clusters can help diversify the state's economy. The seven emerging clusters identified include: information technologies, life sciences, environmental technologies, food technologies, advanced materials, micro and nano technologies, and entertainment.

In Louisiana, it is important to understand these basic concepts of cluster-based economic development in order to understand and embrace Louisiana's targeted clusters and the methods of developing them. While many of the identified industry concentrations Louisiana is focusing on could be strong sectors, perhaps only three or four today are true clusters that have developed these active channels. Following that, there may be several sectors with high concentrations of employment and revenue, but low levels of social capital.

Finally, there are a number of emerging, or targeted, technology areas that do not yet have concentrations, but do have a potential for high growth and evolution into true clusters. These areas are critical to the transformation of Louisiana's economy and should be given top priority. However, they do not meet the active channels criteria yet. By their nature, technology areas will take longer to produce results. Further, their potential in a technology-based economy to improve the effectiveness of Louisiana's existing clusters and sectors is enormous.

Cluster based economic development focuses resources on creating conduits for physical, financial, and social capital that increase the effectiveness of firms within a regional economy. In the process, regions become more competitive and are able to grow and attract firms at a higher rate. The effectiveness of these efforts is measured not only in jobs and investment, but also active channels of communication and collaboration that are aided and increased by the economic development effort.

Cluster based economic development follows a very simple principle: By improving the competitive position of similar and/or related companies within a region through effective social, physical, and monetary capital, an environment is created that will naturally attract other companies. In addition, in the process of improving the effectiveness of clusters, upstream (input) and downstream (output) gaps in the production process provide direct opportunities for new company location. These new locations further diversify the cluster and provide new opportunities for synergy and collaboration. In short, a win-win-win situation is created, and economic development is no longer a zero sum game. As more value is added to resources, higher levels of investment occur, creating high wages and more wealth in the state.

For further information on Louisiana Economic Development, visit http://www.led.state.la.us or call (225) – 342-3000.

Existing Clusters

Oil, Gas, and Energy Technologies

The oil, gas, and energy technologies cluster works to stimulate investment and jobs within the industries that explore, produce, and service the energy industry. The cluster has linkages to advanced materials, metals and transportation industries, as well as increasing dependence on information and automation technologies to increase productivity and remain competitive.

In addition, the Energy Cluster works to enhance Louisiana's opportunities in developing alternative and renewable fuel technologies, further conservation technologies, and stimulate economic policies that positively impact statewide economic development. For over 100 years, Louisiana has been at the forefront of technological innovation in the energy business, and continues to be today. The energy industry, from extraction to production, is an engine of the state's economy. However, the volatility historically associated with energy markets also directly impacts the state's economy because of Louisiana's high economic dependence on oil and gas. Energy technologies provides us with a means to maximize the state's strong energy position, ensure future access to efficient, economic, and reliable energy sources that provide an environment conducive to economic development and promote the development of less energy intensive industries. With this in mind, Louisiana should strive to diversify its sources of energy production while enhancing the extraction of our natural resources and the energy infrastructure to the benefit of the state as a whole.

Reliable, competitively priced and affordable energy is a strategic necessity for the state of Louisiana to maintain the dominant component of our existing economic base and to realistically expand and diversify the state's economy. Louisiana's economy is the 3rd highest energy dependent economy in the United States per capita.

Energy is the lifeblood of the Louisiana economy. Small ripples in the energy supply sector create large waves in Louisiana jobs, income, prosperity, and state government revenue. The future supply of energy should not be taken for granted. To ensure that resource, Louisiana must take strategic steps now to (a) facilitate maximum effective development of existing efficient and reliable Louisiana energy resources, (b) promote development of alternative energy supplies, (c) develop and implement technologies to utilize energy much more efficiently, (d) establish policies that will ensure the development and maintenance of an energy production and transmission infrastructure that ensures a reliable, competitively-priced and affordable energy supply, and (e) diversify the state's economy into more industries that are less energy intensive.

Petrochemicals

The petrochemical industry includes petroleum and chemical manufacturing companies and is strongly tied to the energy cluster. Petroleum and chemical manufacturing companies are technology-intensive, vital to the U.S. economy, and critical to the competitiveness of other

industries. Petroleum refining is critical to all other sectors, as it provides the energy for use in electric power plants, automobiles, chemical processes, and more. Similarly, many industries depend on the chemical industry, so it must continue to produce new, better products at prices that allow other U.S. users and producers of downstream products to compete in an increasingly global marketplace.

Louisiana is home to over 100 petrochemical manufacturers with over 300 manufacturing sites. The petrochemical industry directly employs over 30,000 workers, and more than 1,000 product and service companies identify themselves as having a substantial portion of their business in the petrochemical industry. The chemical and petroleum and coal products manufacturing sectors account for approximately 23 percent of manufacturing employment. Not only are large numbers of people employed within these sectors, these are high wage and salary jobs accounting for approximately 35 percent of the manufacturing payroll. As a result, Louisiana possesses the infrastructure and service providers necessary to be a successful manufacturer (*2000 County Business Patterns*).

Recognizing the aging population of the industry's operators, the state has partnered with industry to provide a dedicated petrochemical operations curriculum, known as PTEC, in a number of our Louisiana Technical College campuses. In conjunction with PTEC, Louisiana has opened three state-of-the-art "glass labs" at our campuses in Lake Charles, Reserve, and Baton Rouge that allow students to experience actual chemical processes in the classroom setting. These systems are complete with integrated process control systems and control room environments to realistically simulate the plant environment. In addition, trailers that are equipped to train maintenance and instrumentation plant workers can be taken to a plant site for in-house training of employees. The PTEC program provides an excellent model for a cluster that has been able to shape public curricula to meet their current and future business needs.

Shipbuilding & Other Durable Goods

- **Shipbuilding**

Shipbuilding, which is the most concentrated of Louisiana's clusters, is truly a high tech existing cluster. The heavy concentration of ship and boat builders in Louisiana grew originally out of the abundance of waterways. The industry is also historically one of the most recognizable, considering that the Higgen's Boat used in the D-Day invasion at Normandy during World War II was an innovation developed in Southeast Louisiana by a native shipbuilder.

Today, the shipbuilding industry is highly diversified, making all types of vessels. This includes, but is not limited to, ships for the armed services, recreational and pleasure crafts, luxury yachts, workboats, crew boats, tugs, and barges for the energy industry. Louisiana is home to the nation's largest commercial ship builder, and a Louisiana company was given the Ship of the Year 2002 award for a ship designed and built in Louisiana.

Approximately 20 percent of the nation's ship and boat building activity occurs in Louisiana. Most of these ship and boat builders are located in the south central part of the state from the

New Orleans area west to around New Iberia. There are more than 20,000 individuals employed directly by approximately 150 ship and boat building and repair companies (*Louisiana Manufacturer's Directory*). Most are small, with almost half employing less that 20 people and about 80 percent employing less that 100 people, although two of the nation's largest shipbuilders are also located in the state. Like the oil and gas and petrochemical companies, the shipbuilders are technology-intensive companies that require skilled and trainable workers.

The ship and boat building cluster has ties to a number of Louisiana's other clusters, including advanced materials for ship coatings, information technology products and services for ship design, machine tools for construction and instrumentation for the vessels, and environmental services companies, all of which provide support to the region's enterprises. In addition, the many other companies provide products and services contributing to the construction efforts.

- **Aviation / Aerospace, Automotive, and Other Manufacturing**

Manufacturing has long been one of the mainstays of Louisiana's economy. At least two additional durable goods sectors are emerging as important clusters in Louisiana -- aviation/aerospace and automotive. The durable goods market in Louisiana has been strong because of several factors: an exceptionally productive and well-trained workforce, the availability of resources, and a multimodal distribution system reaching across the country. In order to boost durable goods manufacturing in Louisiana, the 2002 Special and Regular Legislative sessions created new and enhanced programs to provide greater enticements for companies looking to expand or relocate to Louisiana. The Louisiana Quality Jobs program provides annual rebates for companies providing new full-time jobs, and the Louisiana Opportunity Fund provides a new financing tool to help develop public infrastructure for expanding or relocating companies. The state also extended the sunset date of the Enterprise Zone Tax Credit program that offers double the standard tax credits for certain automotive and airplane manufacturing activities. Other financial incentives provided additional funds for loan and venture capital programs and workforce training programs.

Tourism

Louisiana's tourism cluster includes businesses that provide products and services that support tourism in the state. Components of this cluster include but are not exclusive to restaurant services, hotel and accommodation services, recreation services, transportation services, shopping, visual/performing arts, and spectator sports. Louisiana's hospitality, along with its world-renowned food, unique culture, numerous fairs and festivals, fishing, beautiful scenery and architecture, as well as its many outdoor activities provide the ingredients necessary to make the tourism cluster successful.

Louisiana's 21.3 million visitors in 2001 meant an $8.5 billion boost for the state's economy. The travel industry alone provides approximately 120,000 jobs to the state. The state has invested substantial dollars in marketing and advertising for the last several years, and this investment is beginning to pay off, with sustained growth in tourism in the state.

Although many of the jobs provided within this cluster are relatively low-skill, low paying jobs, the industry provides many jobs for Louisiana's relatively high population with lower education levels. While the state has instituted new K-12 and postsecondary education reforms, these changes take time to have an impact. Jobs for our relatively less educated population are critical, and the tourism industry provides many of those needed jobs.

Transportation and Logistics

The transportation cluster consists of industries that transport cargo and people via ground, rail, water, and air; as well as the support companies and infrastructure for these industries. Logistics is a boundary spanning activity playing a significant role in both traditional and fast growing industry clusters. In 2001, according to the recent Capital Region Competitive Strategy summary, U.S. freight transportation systems moved about $9 trillion in cargo, approximately $4 trillion of which was global expenditures.

Consider these facts about the Louisiana's transportation infrastructure. All of the Class 1 railroads in North America connect in Louisiana. Louisiana's public and commercial airports can accommodate the largest aircraft and are home to some of the world's leading aerospace component manufacturers. Louisiana is home to five of the top fifteen ports in the United States, including three in the top ten. Louisiana's energy and petrochemical industry is connected by over 40,000 miles of pipelines. Because Louisiana is at the center of Western Hemisphere trade, the state plays a vital role in the transportation and distribution industry in North America and worldwide.

Furthermore, Louisiana's installed logistics infrastructure is among the most extensive in North America, including the largest complex of river ports in the world. Connected to the nation's agricultural and industrial heartland by extensive water, rail, and highway links Louisiana is truly a world-class logistics hub.

Agriculture and Food Products

The agriculture and food products cluster remains an important part of Louisiana's economy. Industries included in this cluster possess the common characteristic of the presence of value-added economic activity. This cluster forms the basis of other existing and targeted sectors in Louisiana's economy, including food processing, food technologies, and wood, lumber, and paper.

In 1999, agricultural commodities produced by the state's farmers, fisherman, foresters, and ranchers were valued at $3.8 billion. With value added production of $4.9 billion, agriculture's total contribution came to about $8.7 billion. These commodities accounted for 44 percent of the value of Louisiana's exports in the first nine months of 2000, an increase of almost three percent over the same time period in the previous year. Processed food accounted for an additional 14 percent of total exports.

Agricultural commodities form the basis of other existing and targeted sectors in Louisiana's economy, including wood products and paper, food processing, and food technologies. In addition, agriculture related research is producing biotechnology products and processes that can lead to improved crops, food safety, diagnostics, treatments, and more.

Wood, Lumber & Paper

The wood, lumber and paper cluster is concentrated in the north and central part of the state. It includes a variety of businesses among which are logging and timber companies, as well as companies involved with wood pulp and paper products. Wood product manufacturers, both primary and secondary, contribute to this cluster as well. Primary wood manufacturers include sawmills, lumber companies, and plywood companies; while secondary wood manufacturers include, cabinet and furniture manufacturers, as well as companies involved with pallets/skids and millwork. It is these secondary wood products manufacturers that generate the greatest value added for the state, so it is where economic development efforts will be concentrated.

According to the *2000 County Business Patterns*, the wood products and paper industry provides over 19,000 jobs accounting for approximately 12 percent of manufacturing employment.

The paper manufacturing industry alone accounts for seven percent of manufacturing employment and 8 percent of total payroll. At the same time, this industry accounts for only 2 percent of manufacturing establishments, meaning a relatively small number of establishments employ relatively large numbers of people. 44 percent of establishments have more than 100 employees and only 18 percent have less than 20 employees. If one employer leaves or shuts down, its impact to that region's employment will have significant aftershocks.

Healthcare

The healthcare cluster includes businesses that provide healthcare products and services including but not exclusive to hospitals, doctor's offices, pharmacies, nursing homes, home health agencies, medical testing laboratories, and many more. Established healthcare providers as well as new specialty services are a part of this cluster.

Nationally, the healthcare industry is growing rapidly and is critical to the health and well-being of our state's citizens, making this cluster's success vital for the state of Louisiana. According to *Hospitals and the Louisiana Economy*, Louisiana's healthcare industry provides approximately 203,642 jobs resulting in a total state payroll of $5.7 billion, 14 percent of Louisiana's total payroll.

Louisiana's major challenge in the healthcare industry is the lack of skilled workers. There will need to be an increase in the number of healthcare personnel in the state in order to keep up with the needs of healthcare providers and suppliers.

Emerging Clusters

Life Sciences

The life sciences cluster includes companies that provide products and services related to human health, including pharmaceutical, nutrition, gene therapy, as well as medical devices and instruments. Much of the activity in recent years has been centered in the area of biotechnology.

Biotechnology is the application of engineering principles to the life sciences. Both new and established companies are designing, creating, and producing new substances that are derived from naturally occurring molecular structures and processes. Biotechnology is constituted in part by new capabilities in gene cloning and fusion (genetic engineering); in understanding and facilitating selective biochemical reactions outside their native organisms, including protein engineering, which is leading to more potent drugs often through rational drug design; and in controlled fermentation, preservation and chemical conversions for product enhancement (chemurgy). Biotechnology has required the integration of biochemistry, microbiology, applied plant and animal physiology, pharmacology (and accompanying clinical-type skills), agronomy, animal husbandry, food science and chemical engineering.

Louisiana has in place the elements necessary for a strong supporting infrastructure for medical and biomedical activities. Extensive research is being conducted in a wide variety of fields at the Pennington Biomedical Research Center, the Louisiana Gene Therapy Research Consortium, the Louisiana Biomedical Research Foundation of Northwest Louisiana, the Louisiana Cancer Research Center, the LSU medical centers in New Orleans and Shreveport, the Tulane Medical Center, the Biomedical Engineering Department and Institute for Micromanufacturing at Louisiana Tech, the School of Pharmacy at Northeast Louisiana University, the College of Pharmacy at Xavier University, UNO's National Biodynamics Laboratory, the LSU School of Veterinary Medicine, the Center for Advanced Microstructures and Devices (CAMD) at LSU, and the primate centers associated with UL and Tulane. In addition, the state has funded research and infrastructure to foster and capture opportunities in the biosciences, such as the building three 60,000 square foot wet lab business incubators around the state and funding the research-focused Governor's Bioscience Initiative.

This research base along with strong technology management programs at these universities and research facilities can facilitate the creation and growth of medical and biomedical technology-based companies in Louisiana. Furthermore, these facilities are training students for careers in these companies.

Information Technologies

Perhaps more than any other technical area, information and communication technologies are the basis for today's new economy. The ability to rapidly access and share vast amounts of information was the driving force in economic growth and improved quality of life in the latter part of the 20th Century and now the beginning of the 21st Century. Accordingly, information and communication technologies are essential for economic growth and for helping other technical areas to realize their full potential. This emerging technology area has specific fields of expertise: Software, automation, telecommunication and Internet.

- **Software**

Computer software is one of the few key technologies that daily affect almost every aspect of our lives. The instructions embodied in software run telephone switching systems; make our automobile transmissions shift smoothly by reacting to dozens of sampled factors many times a second; encode and route electronic fund transfers among the nation's and the world's banks; provide the displays and communications vital to our air traffic control system and the control systems of individual planes; guide machine tools in forming complex parts; and run hundreds of thousands of other applications, including such routine but vital business functions as word processing, spreadsheets, and email.

Although Louisiana is not known as a center of software development, Louisiana companies and entrepreneurs have developed and are marketing new software every day. This software is designed to address needs in a wide variety of fields and is often targeted to niche markets. The industry is growing in part due to the significant opportunities afforded by large federal and state software development initiatives. In some cases, local graduates or native Louisianians looking to create jobs for themselves have developed new software so they can stay in or return to Louisiana.

- **Automation**

Among the most important factors contributing to the rebound and growth of the manufacturing sector in the United States over the past 20 years has been the integration of computers into production processes at all levels. Their use has greatly improved the potential for and the efficiencies in: a) capturing, storing, and processing hierarchical data; b) interpreting sensory measurements; c) analyzing and controlling large, complex systems; and d) communicating information more rapidly. Computer aided design (CAD) and computer aided manufacturing (CAM) are ubiquitous as are microprocessor controlled machine tools, material handling equipment, robots and continuous process controllers. The result has been a resurgence of American manufacturing prowess that cost-effectively and consistently produces goods that are of uniformly high quality and thus, sought after in a competitive global marketplace.

Louisiana's participation in this resurgence has been largely (and predictably) focused in the bulk chemical manufacturing and petroleum exploration and refining sectors. Notwithstanding this focused experience, there are opportunities to expand the use of these technologies to other industrial sectors within the state. Moreover, because of this experience, there are even greater

opportunities to develop and exploit advanced manufacturing concepts in the following areas: computer integrated manufacturing (CIM), equipment interoperability, intelligent processing equipment, and predictive process control. Underlying these concepts is the concurrent need to develop improved systems hardware and software, adaptive machine tooling and processing equipment, advanced sensors, and the instrumentation necessary to monitor and maintain each.

- **Telecommunications and Internet**

Telecommunications and Internet technologies are tremendous growth areas that include software as well as hardware technologies. Internet-related technology development is moving forward on many fronts, from improvements in electronic commerce, routing, management of the large amounts of information being moved, and voice communication to innovative ways to use the Internet. In the area of telecommunications, continued growth is projected in wireless technologies both for voice and data transmissions. New satellite systems and high-altitude platforms are interconnected with optical fiber systems and terrestrial wireless networks to provide voice and data access whenever and wherever they are needed. Telecommunications and Internet technology areas offer opportunities in fast-growing markets that are critical to the future of our nation and state.

A number of research efforts in these areas are underway at Louisiana universities. For example, research at the University of Louisiana's Center for Advanced Computer Studies (CACS) focuses on automated reasoning, computer vision and pattern recognition, parallel computing, wireless and mobile computing systems, intelligent robotic systems, and Very Large Scale Integration (VLSI). The NASA Regional Application Center, which is housed in CACS, is one of four initial sites in the United State collaborating with NASA in the Mission to Planet Earth and Earth Observation System program for collecting and processing massive amounts of data transmitted by current and future satellites.

Environmental Technologies

The Clean Air Act of 1970 and the Comprehensive Environment Response, Compensation, and Liability Act of 1980 (CERCLA or Superfund) precipitated massive efforts to reverse precedent damage to the environment caused by detrimental industrial and municipal waste disposal practices. With regard only to hazardous waste sites currently listed by the Environmental Protection Agency (EPA) for example, clean up costs through the year 2020, using existing remediation practices, have been projected to approach $1 trillion. Predictably, in the wake of these environmental initiatives, the demand for environmental technologies has grown.

The environmental cluster includes companies that provide products and services, including consulting services, to companies and governments within and outside of Louisiana. The state is home to innovative companies that are dedicated to manufacturing with the highest standards of environmental stewardship. Our strong manufacturing base has attracted and grown the technical expertise, i.e., chemical, biological, geological, mechanical, and civil engineering, required to effectively implement its environmental initiatives.

There are also strong academic and research programs at the state's post-secondary educational institutions that support the state's efforts. Researchers at LSU have developed novel microorganisms for the biodegradation of toxic wastes and methods for the electrochemical decontamination of soils and slurries. At Louisiana Tech, researchers are investigating the development of environmentally safe pesticides and have patented microbial agents and biological herbicides to control weeds in lawns, turf grass and row crops as well as blue-green algae to improve water quality in aquatic environments.

Likewise, there are a number of firms in Louisiana, large and small, currently engaged in environmental remediation work. For these reasons, Louisiana is well positioned to actively participate in the global market for environmental technologies. This market is growing and maturing, and there remain significant opportunities to advance the state-of-the-art in each of its segments: monitoring, characterization, containment and remediation.

Advanced Materials

The advanced materials cluster includes companies engaged in the development and/or manufacturing of specialized products, such as coatings, adhesives, catalysts, composites, biocompatible materials, and electronic materials. These products are designed to solve problems, lower costs, improve durability, or minimize environmental damage. While most of these materials are developed for a particular use, they are often adaptable to other applications or other market segments.

Advanced materials is an enabling technology industry; one that complements and adds value to existing industries. In Louisiana, advanced materials companies are providing products for the petrochemical, oil and gas production, shipbuilding, wood products, and paper industries. They provide products such as specialized coatings (paints) for ships, oil and gas pipelines, and pipelines and structures in petrochemical plants, as well as adhesives for the wood products and paper industries.

Advanced materials are often a downstream application of the petrochemical sector. Companies in these fields may also be a part of the environmental sector, supply coatings for oil and gas production applications, provide advances used in the biotech/biomedical sector, or may be developed for micro manufacturing applications. They can also contribute to food technologies.

Because Louisiana recognizes the importance of research and education in the advanced materials industry, the state has placed great focus on the development of a strong academic infrastructure for research and development. To date, Louisiana has also invested $18 million in the National Center for Advanced Manufacturing (NCAM). Located in the Michoud Space Center, NCAM provides a sophisticated carbon fiber placement unit that is operated by three public and private partners: NASA, Lockheed Martin, and the UNO. As the shuttle program matures, Lockheed Martin and UNO will pursue new cutting-edge research based on carbon fiber materials, in the anticipation of future investment and job expansion in this niche. Classroom facilities are located onsite providing training for today and tomorrow.

Food Technologies

The food technologies cluster includes companies involved in the production and processing of food. In addition to Louisiana's food processing companies, the state has important advantages in critical, growing technology areas related to safety and to the continuing need for food throughout the world.

The *National Critical Technologies Report* (The White House, Office of Science and Technology Policy) lists three areas under Agriculture and Food Technologies as technologies that are critical for maintaining the strength and competitiveness of the United States: sustainable agricultural production, food safety assurance, and aquaculture and fisheries. Louisiana has important assets in each of these areas.

Global agriculture is facing the challenges of an increasing human population, an accelerating need for food, fiber, feed and raw materials for other industries, and a declining amount of cultivated land per capita. Sustainable agricultural systems must address the development of environmentally sound, productive, economically viable and socially desirable agriculture.

Ensuring food safety to the best extent possible is an ongoing challenge because the route from field or catch to table is a long one with many handlers involved in processing, storage and transportation. No technology for processing food is universally protective, but efforts to increase the level of protection are made through food safety technologies including technologies to monitor food quality and detect bacteria, viruses, parasites, and/or chemical contaminants at the processing plant.

The increase in food poisoning from bacteria, viruses and parasites is escalating in almost every country that collects statistics on the subject. Attempts to halt these trends in food poisoning occurrences have focused on the re-establishment of surveillance systems and attempting to require new testing and standards on the food industry.

The Southern Regional Research Center (SRRC), a U.S. Department of Agriculture (USDA) lab in New Orleans, is heavily involved in R&D related to food technologies. The Food and Feed Safety research unit focuses on characterization of factors that contribute to food contamination and development of methods to detoxify these contaminants; developing methods to increase resistance to crop infections and reduce contamination of preharvest crops.

Aquaculture is a rapidly growing agriculture segment that will play a significant role in providing a stable source of fish protein in the face of declining yield of oceanic fisheries. Aquaculture and fishery technologies make a significant contribution to the U.S. food supply. They also make a positive contribution to job creation and economic growth, and to the U.S. balance of payments by reducing dependence on imported seafood and increasing U.S. exports of fish and shellfish. Louisiana's aquaculture crops play a significant role in contributing to this food supply with its estimated farm value of $123 million.

Although food technology firms are small in Louisiana, food processing is important in the state and there is a large research base at Louisiana universities, including the LSU Agricultural Center and its extension offices and research centers around the state, the Crawfish Research

Center at ULL, LSU's Sea Grant Program, and USDA's Southern Regional Research Center in New Orleans (a federal lab focused largely on food technologies) that can provide support for the companies as well as develop technologies for transfer to the private sector.

Micro- & Nano-Technologies

Micro- and nano-technology is simply the science of small things. This field includes the design, fabrication, integration, and validation of devices that utilize the benefits of engineered micro- and nano-scopic features. Micro refers to structures that range in size from 100 micrometers (diameter of the human hair) to 1 micrometer (diameter of blood cells), while nano spans the size range of blood cells down to the atomic level (.5 nanometer is the diameter of an atom).

Microstructures are being used and required increasingly as smaller devices with increased functionality are demanded. Their primary use today is as sensors in car airbag deployment systems and in nozzles of ink jet printers; however, researchers throughout the world are developing tiny motors, valves, RF devices, heat exchangers, computer memory chips, turbines, and pumps. In addition, very important uses will be developed in the medical, diagnostic tool, and surgical instrument industry.

Around the state a number of groups are developing advanced micromachining technology, which can be used to create a wide range of new products. These manufacturing technologies are enabling micro- and nano-technology to move from the research lab into the showroom. The new manufacturing techniques are leading to the miniaturization of products, which opens new markets and/or maintains competitive products through cost reduction, improved reliability and increased functionality.

A number of processes are being developed to manufacture structures and microelectromechanical systems (MEMS). Technologies related to these processes are also being developed. The new manufacturing techniques are leading to the miniaturization of products, which opens new markets and/or maintains competitive products through cost reduction, improved reliability and increased functionality.

Micro- and nano-devices are now regarded as critical technologies in fields such as the aerospace, automotive, biomedical and communications industries. Future commercial applications include microfluidic manipulators for implantable drug dispensers, navigation gyroscopes for aerospace use and magnetic and optical storage, switching devices, and displays for information technology. According to one estimate, the microelectromechanical systems (MEMS) market is predicted to grow from an estimated $2 to $5 billion in 2000 to $8-$15 billion by the year 2004. (*Small Times*, Jan. 21, 2002.)

Louisiana has the potential to be at the forefront of development of these technologies. At the beginning of the 1990s, Louisiana established strong microfabrication and materials research centers across the state, namely the Institute for Micromanufacturing (IfM) at Louisiana Tech University, the Center of Advanced Microstructures and Devices (CAMD) at LSU, and the Advanced Materials Research Institute (AMRI) at UNO. These focused efforts are supported by

research teams at the associated universities addressing subjects ranging from basic research to the education of the next generation workforce for industry.

Lately, additional complementary efforts have been initiated at Louisiana's medical schools to adopt these technologies in their research efforts and use them to create new tools. Furthermore, the first spin-off companies have been founded and are focused on commercializing a variety of micro- and nano-enabled systems.

All these efforts are being supported by statewide initiatives to strengthen collaborations among the groups. They are also working to attract new businesses to the state to build upon this new high-tech industry. The results of microfabrication research and development will also have significant impact on many of Louisiana's other existing and emerging clusters, such as biotechnology, oil and gas, advanced materials, and even in the automotive manufacturing sector.

Entertainment

The entertainment cluster consists of businesses and infrastructure associated with the music, film, and video industries. It also includes other related industries such as sports (Hornets, Saints, and racing) and live entertainment. The state is focusing its resources on developing and improving the infrastructure needed to support the entertainment industry. Examples include working with banks to familiarize them with the industry, setting up funds to support the film industry, and working with significant law firms in the state to help them develop entertainment practices.

For Louisiana to diversify its economy, the entertainment industry is proving to be an important area of growth. The state's large amounts of production and music talent, along with an award-winning tourism industry, make the state a likely candidate for the success of an entertainment cluster. Leaders of this cluster are continuing to travel around the state surveying the vast wealth of talent located here and defining the issues that need to be addressed to ensure that an infrastructure is in place to make the entertainment industry a thriving sector in Louisiana.

During the 2002 special session of the legislature, the state showed its commitment to the film and television industry by passing three pieces of legislation providing incentives for productions in Louisiana. The result of these incentives is an increase in production in the state from $30 million in the year prior to the incentives to more than $140 million in production completed, now shooting, or with commitments to begin shooting in the near future. The increased amounts of work coming to Louisiana have pushed the state to address some missing infrastructure components, including job training for these high paid jobs that do not necessarily require a college degree.

In addition to the incentives for the movie and television industries, New Orleans recently eliminated the live performance tax on music, opening up even more opportunities for growth its vibrant music sector.

Appendix B
About the
Louisiana Economic Development Council

The Louisiana Economic Development Council (LAEDC) was created by the Legislature in the First Extraordinary Session of 1996 (Act No. 20). Although originally a part of the Department of Economic Development, since 2001 the Council has been under the Office of the Governor. The Legislature made this change to emphasize that economic development is the responsibility of all state agencies, and all are responsible for various aspects of the *Louisiana: Vision 2020* strategic plan.

The sitting Governor serves as the chair of the Council. Since 1996, the Council has been led by Gov. M. J. "Mike" Foster. Dennis Lower, Director of the InterTech Science Park, and Vice President for Planning and Development of the Biomedical Research Foundation of Northwest Louisiana now serves as the Vice Chair. Gregg Gothreaux of the Lafayette Economic Development Council and William Sawyer, of Sawyer Industrial Plastics in West Monroe have previously served as Vice Chairs.

Members of the Council include the Governor, the Secretary of Economic Development, and 17 other members representing business (manufacturing, mining, construction, banking, venture capital, and tourism), economic development (with representatives from the five largest urban areas and a rural area), and education.

Each year, the Council prepares a report to the Governor, Legislature, and people of the state. This report, known as the annual action plan, updates each of the *Vision 2020* benchmarks in order to monitor how the state is progressing toward its goals. The action plan also sets out the Councils recommendations for action in the coming year – actions that will move the state ahead toward the Vision 2020 goals – and provides an accounting of the progress made toward the recommendations included in the previous action plan.

This *Louisiana: Vision 2020, 2003 Update* is the Council's first update of the state strategic plan, an update that is required every five years. Many people throughout the state are working toward the same goals. As outlined in the plan, substantial progress has been made in many areas; however, much remains to be done to make our state *the* place to live, work, visit, and do business. This *2003 Update* provides the common goals, objectives, and benchmarks that will carry us forward for the next five years.

The Council uses task forces to handle much of the detail work of the Council, including benchmarks and recommendations. The Council's nine task forces include:

- Agribusiness
- Culture, Recreation & Tourism
- Education/Workforce Development
- Energy & Basic Industries

- Environment
- Finance & Capital
- Infrastructure & Transportation
- Programs, Incentives, Tax & Revenue
- Science, Technology & Diversification

These task forces are chaired by a Council member or his or her designee. Task force members are drawn from around the state and include business, education, and government representatives with expertise in the fields covered by the task force.

The Council uses its task forces to:

1) Develop and update benchmarks to monitor progress toward *Vision 2020* goals; and
2) Develop recommendations that are presented to the Council as suggestions for inclusion in the Council's annual action plan to the Governor and the Legislature. Together, these recommendations make up the short-term policy and practice agenda for the upcoming year.

A list of the task force members is included at the end of this section.

In addition to the task forces, in 2002, the Council created a Communications Committee. The Communications Committee is organizing the Council to educate the public about *Vision 2020* and work to improve the state's image to citizens within and outside the state by publicizing the positive changes now happening.

LOUISIANA ECONOMIC DEVELOPMENT COUNCIL

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Honorable M. J. "Mike" Foster
Governor State of Louisiana
Chair, Louisiana Economic Development Council

Beverly Gianna
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Adam Knapp
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John R. Schween
Construction
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Bobby Simpson
Local Government
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Cabinet Advisory Group

The Act that created the Council also created the Cabinet Advisory Group. As outlined in the Act, the Cabinet Advisory Group advises, coordinates with, and provides research, informational, and staff support to the Council. The Advisory Group meets quarterly with the Council to exchange information and facilitate implementation of *Vision 2020* and the annual action plans.

Cabinet Advisory Group members include: Don Hutchinson, Secretary, Department of Economic Development; Lieutenant Governor Kathleen Blanco; Kam V. Movassaghi; Secretary, Department of Transportation and Development; Dawn Watson, Secretary, Department of Labor; Jack Caldwell, Secretary, Department of Natural Resources; Hall Bohlinger, Secretary, Department of Environmental Quality, Gwen Hamilton, Secretary, Department of Social Services; Cecil Picard, Superintendent of Education, Jason Stagg, designee, Department of the

Treasury; Mark Drennen, Commissioner, Division of Administration; Bob Odom, Commissioner, Department of Agriculture and Forestry; E. Joseph Savoie, Commissioner of Higher Education; Cynthia Bridges, Secretary, Department of Revenue; Phillip Jones, Secretary, Department of Culture, Recreation, & Tourism; Chris Weaver, Director, Workforce Commission; David Hood, Secretary, Department of Health & Hospitals; Walter Bumphus, President, Louisiana Community & Technical College System; Suzy Sonnier, Director, Children's Cabinet; Richard Stalder, Secretary, Department of Public Safety & Corrections; and James Jenkins, Jr., Secretary, Department of Wildlife & Fisheries.

State Department Representatives to the Council

State Department representatives were named as staff support to assist the Council in developing *Louisiana Vision 2020*. They are: Leonard Kleinpeter, Lieutenant Governor's Office; Angele Davis, Division of Administration; Jason Stagg, Department of the Treasury; Eric Kalivoda, Department of Transportation; Alesia Wilkins, Department of Labor; Katherine Vaughan and T. Michael French, Department of Natural Resources; Dr. Charles Killebrew, Department of Environmental Quality; Dr. Bill Miller, Department of Education; Heather Devall, Board of Regents; Frank Millican, Department of Agriculture & Forestry; Jackie Gonzaque, Department of Social Services, Bob Johannessen and Charles Castille, Department of Health & Hospitals; Robert Mehrtens, Commission on Law Enforcement; Suzy Sonnier, Children's Cabinet; and Marianne Burke, Department of Wildlife & Fisheries.

Louisiana Economic Development Council Office

The Louisiana Economic Development Council (LAEDC) is housed in the Office of the Governor, P. O. Box 94004, Baton Rouge, LA 70804. Ann Guissinger serves as the director of the Council under contract with the Office of the Governor. The Council office phone number is (225) 342-7015 and the fax number is (225) 342-7099. The LAEDC webpage and the *Louisiana: Vision 2020, 2003 Update* and the Council's annual action plans are found at http://vision2020.louisiana.gov.

Acknowledgments

In addition to the above, the Council was assisted by Ann Guissinger, Director of the Louisiana Economic Development Council and Andy Kopplin, Adam Knapp, Michael Wang, Catherine Kitchen, Suzy Sonnier, Jim Marchand, Tara Trahan, Whitney Stover, Holly Barham, and Dan Miranda with the Office of the Governor. Special thanks to Ann Guissinger and Adam Knapp for preparing the *2003 Update* document and to Jim Clinton, Executive Director of the Southern Growth Policies Board, for facilitating the eight public meetings around the state and providing important strategic advice and editorial assistance.

The Council would also like to thank LeAnne Weill and The Weill Agency in Baton Rouge, Dr. Jim Richardson, with the E. J. Ourso College of Business Administration at LSU, Ray Brady, Systems Solutions Consulting, New Orleans, and Alex Schott, Web Manager for Louisiana Economic Development.

Task Forces

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Anthony M. Culp, Aviation Director, Department of Transportation and Development, Baton Rouge

Cathy Gautreaux, Executive Director, Louisiana Motor Transport Association, Baton Rouge

Mary Kay Henderson, Manager, GIS and Cartography Unit, Department of Transportation and Development

John Holt, Executive Director, Caddo / Bossier Port, Shreveport

Eric Kalivoda, Deputy Assistant Secretary, Office of Planning and Programming, Department of Transportation and Development, Baton Rouge

David C. Kane, Director, Logistics / Transportation Cluster Development, Department of Economic Development, Baton Rouge

Sherri McConnell, Executive Director, Ports Association of Louisiana, Baton Rouge

Roy Miller, Director, Shreveport Regional Airport, Shreveport

Don Pierson, Executive Director, Greater Bossier Economic Development, Bossier City

Don Powers, Executive Vice President, Baton Rouge Chamber of Commerce, Baton Rouge

Sam Richardson, Manager, Economic Development, Entergy, Baton Rouge

J. Kent Rogers, Executive Director, Northwest Louisiana Council of Governments, Shreveport

Mike Stagg, Director, digitallouisiana.com, Lafayette

The Honorable Bobby Simpson, Mayor-President, City of Baton Rouge, Parish of East Baton Rouge, Baton Rouge

Dave Wagner, Executive Vice President, Port of New Orleans, New Orleans

D. J. Webre, Chief, Ports and Flood Control Section, Department of Transportation and Development, Baton Rouge

Roger T. White, Senior Vice President, Edison Chouest Offshore, Galliano

Science & Technology/Diversification Task Force

Co-Chair: Dennis Lower
Co-Chair: Vic Lafont

Zazell Dudley, CEO, Dudley Enterprises, Shreveport

Stan Fulcher, LA Department of Economic Development, Baton Rouge

Paul Hale, Director of Technology Transfer Center, Louisiana Tech University, Shreveport

Carla Fishman, Executive Director, Research, Administration & Technology Development, Tulane University, New Orleans

Sylvia Goldman, Director-Technology, Innovation & Modernization Services, Louisiana Department of Economic Development, Baton Rouge

David M. Goodwyn, President, Association of Louisiana Technology Companies (ALT-C),

Baton Rouge

Ann Guissinger, Director Louisiana Economic Development Council, Baton Rouge

James Hardy, Director of Technology Development, LSU Health Sciences Center, New Orleans

Jim Hendricks, Director, Economic Development, Entergy, Baton Rouge

Dennis Herringshaw, Director, Office of Technology Transfer, University of New Orleans, New Orleans

Paula Jacobi, Assistant Director, Intellectual Property, LSU Agricultural Center, Baton Rouge

Anne Jarrett, Director of Sponsored Projects-Grants, Contracts and Intellectual Property, Pennington Biomedical Research Center, Baton Rouge

Tommy Kurtz, Director of National Marketing & Business Development, MetroVision, New Orleans

Victor Lafont, South Louisiana Economic Development Council, Thibodaux

Dennis Lower, Vice President for Planning & Development and Director, Intertech Science Park, Biomedical Research Foundation of Northwest Louisiana, Shreveport

Jim Malsch, President, Enterprise Computing Services, LLC, Shreveport

Steven E. Moye, Director, Biotechnology/Biomedical Cluster Development, Louisiana Economic Development, Baton Rouge

Lynn Ourso, Louisiana Economic Development, Baton Rouge

Todd Pourciau, Assitant Vice Chancellor, Office of Research & Graduate Studies, Louisiana State University, Baton Rouge

Linda Prudhomme, Port of South Louisiana, LaPlace

Anthony Scheffler, Dean-Graduate Studies, Research and Information Systems, Northwestern State University, Natchitoches

Mildred Smalley, Vice Chancellor for Research, Southern University, Baton Rouge

Skip Smart, Assistant Secretary, Office of Business Development, Louisiana Economic Development, Baton Rouge

Keith Thibodeaux, Manager of Technology, Lafayette Economic Development Authority, Lafayette

Randy Webb, President, Northwestern State University, Natchitoches

Elizabeth Williams, Executive Director, University of New Orleans Foundation, New Orleans

Michael Williams, Director of Business Resource Services, Louisiana Economic Development Corporation, Baton Rouge

Tax & Revenue/Programs & Incentives

Co-Chair: Donna Carville
Co-Chair: Jimmy Lyles

Don Allison, KPMG, Baton Rouge

Katie Chiasson, CLECO, Crowley

Gregg Gothreaux, Lafayette Economic Development Authority, Lafayette

Jim Hendricks, Entergy, Economic Development, Baton Rouge

Tommy Kurtz, MetroVision Economic Development Partnership, New Orleans

John LeBlanc, Louisiana Association of Business & Industry, Baton Rouge

Jimmy Lyles, Chamber of Greater Baton Rouge

Don Pierson, Greater Bossier Economic Development Foundation, Bossier City

Elton Pody, Central Louisiana Chamber of Commerce, Alexandria

Jack Walker, MetroVision Economic Development Partnership, New Orleans

Chris Dicharry, Kean Miller, Baton Rouge

Ty Keller, Public Affairs Research Council, Baton Rouge

Ellen Rhorer, Louisiana Dept. of Revenue, Baton Rouge

Claire Babineaux-Fontenot, Adams & Reese, Baton Rouge

Greg Bowzer, Louisiana Chemical Association, Baton Rouge

Senator Mike Michot, Louisiana Senate, Lafayette

Jeff Copeskey, Louisiana Mid-Continent Oil and Gas Association, Baton Rouge

Bill Potter, Postlethwaite & Netterville, Baton Rouge

Dr. Jim Richardson, Department of Public Administration, LSU, Baton Rouge

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